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A BUSINESSPAPER FOR THE FARM CHEMICAL INDUSTRY

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Business Journalists Since 1873

Vol. 8 DECEMBER, 1961 No. 12

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Controlled Circulation Postage Paid at Minneapolis, Minnesota

Published Monthly by The Miller Publishing Co. P. O. Box 67, Minneapolis 40, Minn.

Subscription Rates: $5 for 1 year;$8 for 2 Years Single copies 50¢

Optimism Prevails . . .

1962 Business Prospects Appear Bright to Industry Leaders Peering Into Year Ahead

WHAT IS the outlook for business in the new year ahead? This is the perennial question posed by businessmen everywhere, but the manufacturers of pesticides and fertilizers have, it seems, an unusually large group of factors to weigh. The influence of government programs, the level of farm income, new legislation and the psychology of these pressures on farmers' attitudes toward the industry's products, all have a direct bearing on what is likely to occur next year.

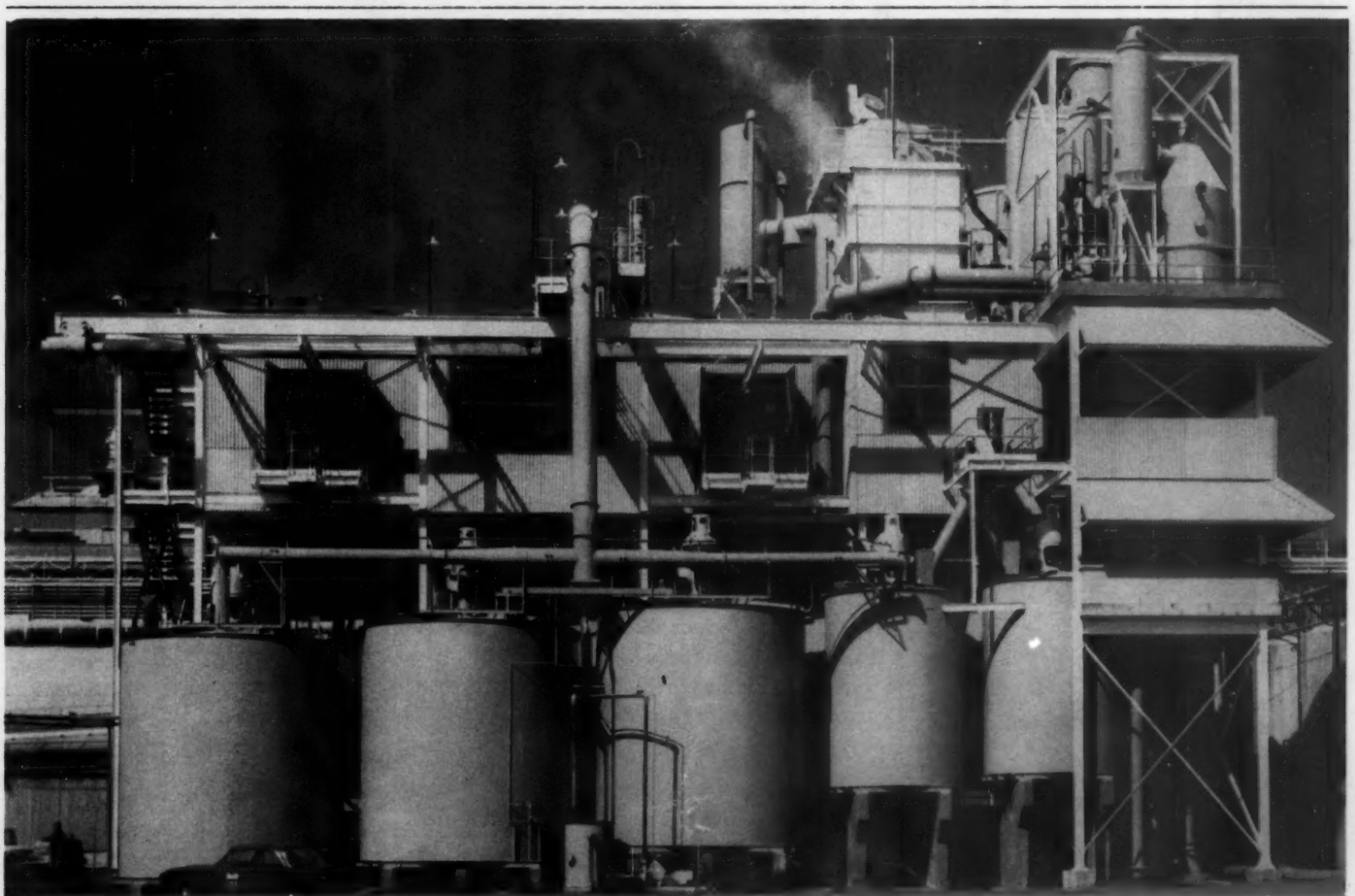
The way in which these matters are viewed by leaders in the trade is shown in the comments published on subsequent pages in this issue of Croplife.

It is obvious that an optimistic attitude prevails. This happy outlook is voiced by practically every contributor, the only differences being in the matter of degree or in different approaches to the same end.

Significant points mentioned include the growing awareness on the part of farmers for their need to follow scientific farming practices, which in turn brings the grower closer to heeding recommendations issued by various state experiment stations.

Other observers emphasize the desire on the part of farmers to raise their per acre profits through higher yields and higher quality products. The fact that this can be accomplished by growing more on fewer acres, provides a strong incentive toward greater use of chemical aids on the farm. This touches a vital area of interest to manufacturers of insecticides, weed killers, and plant food products.

Comments of men in the trade are published inside. **Please turn this page . . .**



SWIFT COMPLETION—The new phosphoric acid producing plant above was recently completed and is now in operation at the Swift & Co. Phosphate Center near Bartow, Fla. The plant, constructed by Dorr-Oliver Engineering, Ltd., is part of Swift's long-range expansion in the chemical field, according to W. F. Price, general manager of Swift's agricultural chemical division. Swift has had phosphate mining operations in the Bartow and Ft. Meade areas for a number of years, and has a triple super phosphate plant in connection with its mining operations. The new facilities will increase production of triple super phosphate. Swift also has under construction at the Florida site a new contact sulfuric acid plant, expected to be completed in April, 1962. In another chemical venture, Swift & Co. joined with Skelly Oil Co. to construct a $10,000,000 nitrogen products plant near Clinton, Iowa.

OUTLOOK

Increases in Chemical Sales Expected by West Coast Company Executive

By M. E. Wierenga
Vice President
Ortho Division, California Chemical Corp.
Richmond, Cal.

AGRICULTURAL chemical sales in 1962 are expected to be greater than in 1961, but the increase will not be striking.

The agricultural prospects next year appear to indicate an expanding domestic market and high farm exports. Assuming a continuation of existing farm programs and price supports, net farm income should increase somewhat over 1961 estimated goals.

Greater farm incomes lead to larger farm expenditures. This is because each year more farmers are learning that chemicals aid crops and livestock, destroy pests, kill weeds, preserve and clean, cure and heal. All of this adds up to better yields per acre and lower unit costs.

So an expanding market, higher farm income, lower costs and an increasing awareness by the farmer of the benefits of chemicals might be expected to lead to an outstanding year. However, there is at least one deterrent to this possible growth. I believe acreage restrictions will exert a restraining pressure on agricultural chemical sales in 1962. Farmers will not immediately switch to cutting production costs and increasing yields on that land remaining in production through more intensified fertilization and pest control.

There is a growing awareness of course on the part of the farmer for the need to follow scientific farming practices; however, this knowledge comes slowly. This is why I do not expect striking increases in sales immediately following acreage restrictions.

I think all of us in the agricultural chemical industry would be wise to devote much more time than we have in the past to selling planned programs and to telling the story of what agricultural chemicals can do for the farmer in profit per acre. In the long run, our sales will be better because of it. We spend entirely too much time now cheapening our service and our products by selling chemicals.

Agricultural chemical sales used to fluctuate widely from year to year with a net long term upward trend evident. In recent years, growth has stabilized into a steady 3 to 6% increase each year. I expect 1962 to continue this present long term trend.

More '62 Sales

Limits on Yield Per Acre Seen as Unlikely In Spite of Surpluses

By Joe E. Culpepper
Vice President
Spencer Chemical Co.
Kansas City, Mo.

QUITE a number of factors are involved in making an appraisal of what 1962 may hold for the fertilizer industry. These include the extent of government controls, farmers' attitudes and, of course, the weather.

Joe E. Culpepper

Regarding acreage restrictions and their influence on fertilizer sales in 1962, we do not, generally speaking, anticipate acreage limitations severe enough to influence adversely total fertilizer sales, as compared to this year. With some crops, in certain areas of the country, this statement may not apply. I have in mind specifically the tobacco producing areas of the eastern seaboard. There may be others. Again, however, thinking of the nation as a whole, we do not foresee a reduction in total fertilizer use next year.

There have been hints of possible per-acre yield restrictions on some crops, but as we see it, Congress will not legislate yield per acre. It is a most serious matter to contemplate legislation against the lowest practical economic production cost per unit of any crop or any commercial product. If, however, we were to find ourselves in error on this point, and per acre yield controls are applied by law, then we think the use of fertilizer would be affected adversely—perhaps dramatically—depending upon the per acre level of production permitted.

Farmers can be sold on making more profit on fewer acres by cutting production costs. This has been proved over the past two decades during which time they have learned that in cutting production costs, more profit per acre may be realized. This accounts for increased usage of fertilizers and pest control materials as total acres have been restricted by imposed governmental limitations.

There has been some debate, too, concerning the merit of raising more food in the U.S. in view of possible atomic war and the resulting need for emergency supplies. There are many sides to this question, but generally speaking, however, I would look at it negatively. Assuming an atomic war does come, which we all hope and pray will not be the case, the basic needs as I see it, will be twofold: First, protection from destruction and/or contamination of the crop surpluses held in storage at the time of the attack; secondly, transportation facilities for distribution of crop reserves as quickly and expeditiously as possible after the attack. Having larger stocks of surplus crops on hand than we now have would not help solve either of these problems.

3 More Regional Supply Terminals ... Nearing Completion

Three additional major sulphur-consuming areas will soon be served with short-haul deliveries of TGS Molten Sulphur. As a matter of fact, at Jacksonville the service is even broader for we will also be stockpiling solid sulphur. Facilities are being set up to 'vat' part of the molten sulphur as it comes in by tanker from Beaumont. We're already providing this dual service at Norfolk.

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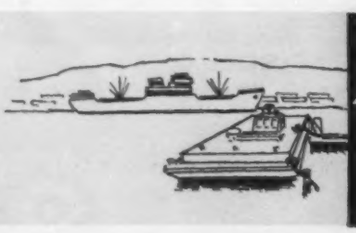

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For Pesticides, Fertilizers

Relatively Little Action On Pesticide Legislation Expected in 1962 Sessions

By Jack Dreessen
Secretary
National Agricultural Chemicals Assn.
Washington, D.C.

THE PESTICIDE industry can look for continued growth in 1962. That is the considered judgment of many persons who have studied the over-all potential for next year. New products, new markets, increased interest in pest control on the part of farmers—all of these should contribute to a generally healthy year for the industry. As members of the industry look forward to a good year, they also have one eye on the state legislatures to determine whether legislation may be introduced that would place further restrictions on their operations.

Jack Dreessen

All indications are that 1962 will be a "light" state legislative year. Only 22 state legislatures are scheduled to meet in regular sessions. Of these, nine are limited to considering budgets, appropriations, and revenue bills.

At the moment, we have been alerted to proposed legislation in only three states that would have a direct bearing on pesticides. Measures are likely to be introduced in New York, Massachusetts and South Carolina that will be of concern to the pesticide industry.

In New York state, a new fertilizer bill is being drafted—the first major revision of the state's fertilizer law in many years. The proposed new law will have a section on fertilizer-pesticide mixtures, but reports we have received indicate that the bill will be acceptable to the industry.

Much confusion has surrounded the revised pesticide law enacted in South Carolina in 1961. Many manufacturers and formulators are not sure whether they are subject to the manufacturer's license which the new law imposed. We believe that a bill will be introduced to clarify the manner of raising money to finance the enforcement of the pesticide law in that state. Industry may have to present its position forcefully on this matter.

A bill has already been pre-filed in Massachusetts that would place additional restrictions on the application and use of pesticides. Based on proposals introduced during the past two sessions of the legislature, there will undoubtedly be additional bills introduced that, if enacted, would drastically curtail the use of pesticides in Massachusetts.

As we look beyond the next immediate legislative season, the industry can anticipate sustained interest in pesticide legislation on the part of state legislators. These men and women are continually being pressured by small, but highly organized and vociferous organizations, who often have as their objective a complete state-wide ban against the use of all pesticides.

The industry must remain alert to the actions of these organizations and individuals who strike out against pesticides, and be prepared to combat their half-truths and false statements at hearings, conferences, and even through the use of mass media, if this becomes necessary.

Expanded Granular Use and Application of Less Toxic Materials Seen for 1962

By Stuart Bear
Niagara Chemical Division
FMC Corporation
Middleport, N.Y.

SALES and earnings for Niagara Chemical Division of FMC Corp. reached new record levels for 1961, and while not attempting to report for the pesticide industry I am sure that in general our industry experienced record sales while profits as a per cent of sales declined. Competition for sales during a year of relatively normal pest infestations resulted in the lower profit percentage. Niagara's own favorable performance can be attributed to increased sales effort oriented to solving customer problems, even in a "poor insect year."

An abundance of rain in most areas of the country held down mite infestations while making certain other insects, such as codling moth, easier to control. Apple scab and other fruit disease situations were normal. Cotton pest problems were about normal. Possibly the one severe outbreak of insects occurred in the Dakotas where grasshoppers were an early summer problem.

Regarding over-all changes and trends in the pesticide industry, there appears to be a marked increase in expenditures for basic research. Many companies are intensifying efforts to discover new pesticide compounds. This effort is prompted not only by agriculture's need for improved products but also by industry's desire for proprietary products that are less susceptible to profit margin declines.

There are two trends likely to continue in the product area. These are increased use of granular pesticides and a growing effort towards use of less toxic materials.

Efforts by the fertilizer and pesticide industries to "get into each others backyards" are on the rise. This has been marked by several pesticide firms building fertilizer production units and at the same time several big name plant food com-

Turn to OUTLOOK page 9

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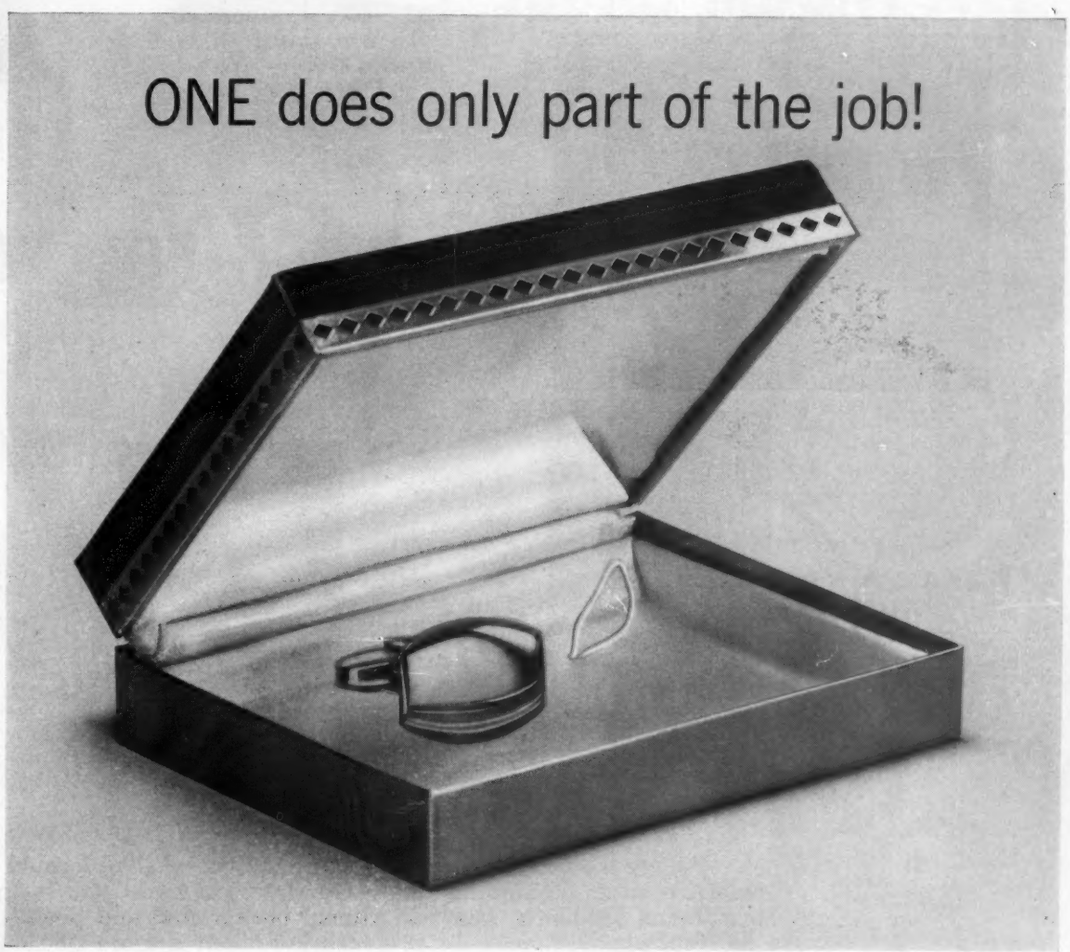

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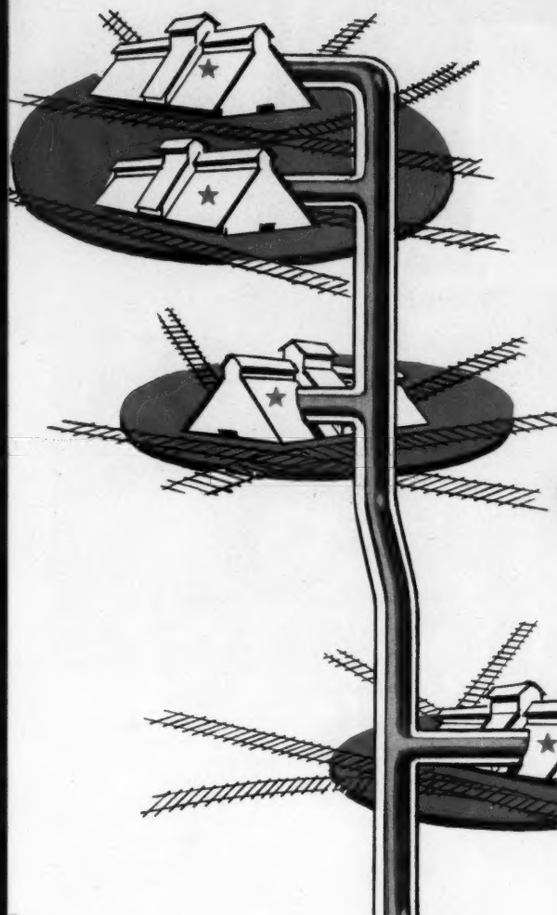

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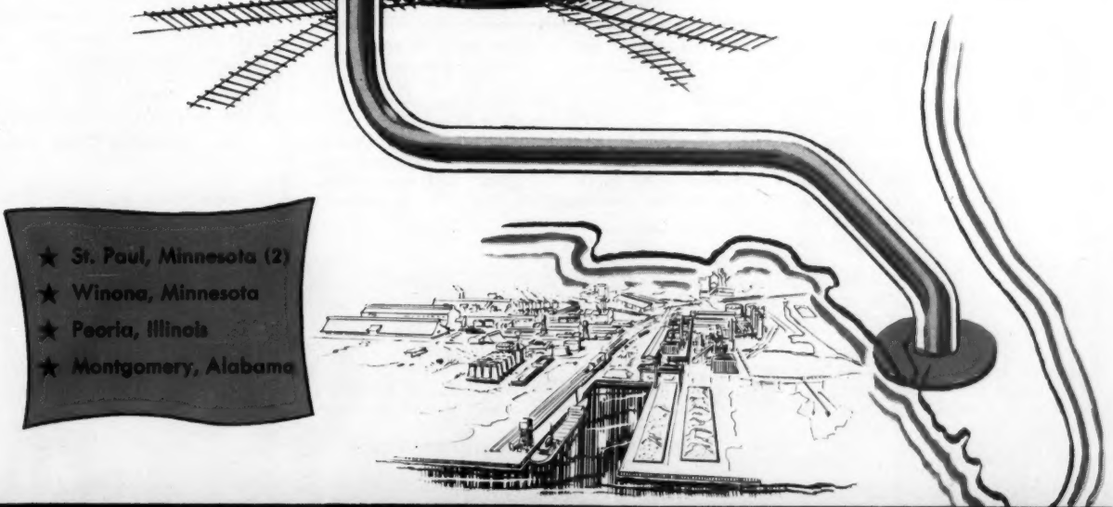

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Practical Tips on Materials Handling at 1961 Round Table

TOP PRODUCTION personnel of the U.S. fertilizer industry, some 500 strong, were in attendance at the 11th annual fertilizer industry Round Table at the Mayflower Hotel, Washington, D.C., Nov. 8-10. Topics covered at the well-attended three-day sessions included materials handling and weighing, dust collecting in plants, ammoniation practices in the industry, reports on standardization and uniformity of raw materials, the composition and use of new materials in fertilizer formulation, safety, and bulk blending practices.

Speakers represented raw material suppliers in the trade, manufacturers of equipment, state agricultural colleges, the Tennessee Valley Authority and the National Safety Council. The audience comprised largely men responsible for the day-to-day activities in fertilizer plants . . . men who bear responsibilities for maintaining inventories, loading and unloading materials, and for the general production of plant foods. They packed the meeting room each session and extended their discussions with continuing private discourses on fertilizer production in the hotel lobby, corridors, and in smoke-filled rooms after hours.

Materials Handling Key To Efficiency in Plant

In his keynote address at the opening session of the Round Table, W. B. McClelland, secretary, American Materials Handling Society, Inc., Cleveland, Ohio, told the group that improvements in methods of materials handling promise the best opportunity for profits to the fertilizer manufacturer. Talking on the cost and accounting aspects of materials handling, the speaker said that moving and storing goods involve planning, controlling and executing. Material flow through the plant involves three phases: Transit, process and distribution, Mr. McClelland pointed out.

Management needs to know the cost of material flow, and accountants can itemize and summarize these costs in order to provide totals if desired. In many cases, he added, a person bearing the title of "materials handling manager" might be given responsibilities including all activities having to do with getting the right material in the right quantity to the right place at the right time in the right condition. The scope of such duties, he said, should be on a level with the production manager. The latter's responsibilities would then involve putting the plant's product in saleable form.

Not only in manufacturing are improvements needed in the fertilizer industry, Mr. McClelland said, but also in distribution and storage by the customer. He recommended adoption of a unitizing system which he said would eliminate much of the cost and some bottlenecks in these areas. In planning such a program, a number of goals should be kept in mind. These include having units that can be readily filled at the supplying point; units easily transported on flat bed carriers; units that may be stored out-of-doors without damage by weather; and units which may be handled by already existing equipment used for other purposes as well.

To be workable, the speaker concluded, a unitization program and an integrated handling system must be initiated and controlled by the receiver of the commodity. The supplier or vendor has unsolvable problems if he undertakes to provide a system for his customers.

Pneumatic Systems in Fertilizer Manufacture?

Other speakers, continuing the discussion on materials handling problems, discussed various means of conveying fertilizer materials in and out of the plant. John Fischer, Sprout, Waldron & Co., said that while the pneumatic system of transporting materials is not new, it is a relative newcomer in the fertilizer industry.

He described the pneumatic system as being the movement of free-flowing materials through pipes by air pressure. Three types are used, he said. These are the negative flow of

Turn to **ROUND TABLE** page 12

AT ROUND TABLE MEETING—Above, left to right, keynote speaker, W. B. McClelland, secretary, American Materials Handling Society, Inc.; John Fischer, Sprout, Waldron & Co.; R. M. Geisenheyner, Butler Mfg. Co., and Dr. Vincent Sauchelli, Round Table chairman. Below are speakers at a session on handling liquid materials and storage facilities. Left to right, they are Tom Martin, U.S. Industrial Chemicals; Dr. Sauchelli; Walter W. Whitlock, Texaco, Inc.; Elmer C. Perrine, Nitrogen Division, Allied Chemical Corp.; Ben Anderson, Sinclair Petrochemicals; Joe E. Reynolds, Jr., Davison Chemical Co., division, W. R. Grace & Co., and James W. Lewis, E. I. duPont de Nemours & Co., Inc.

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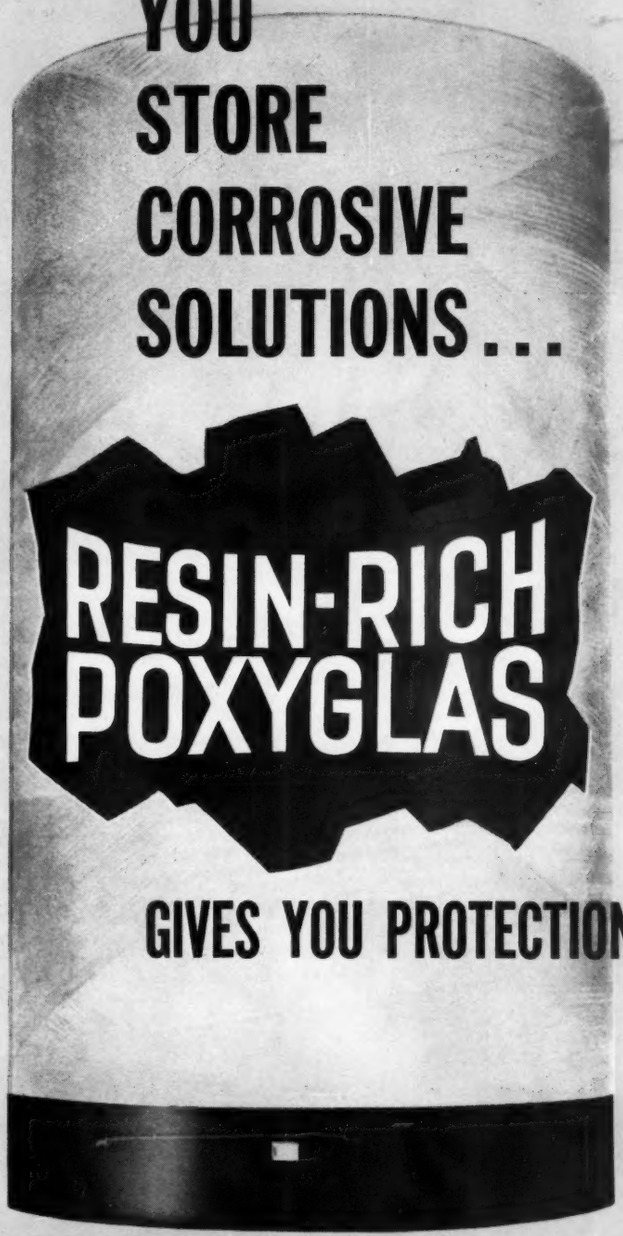

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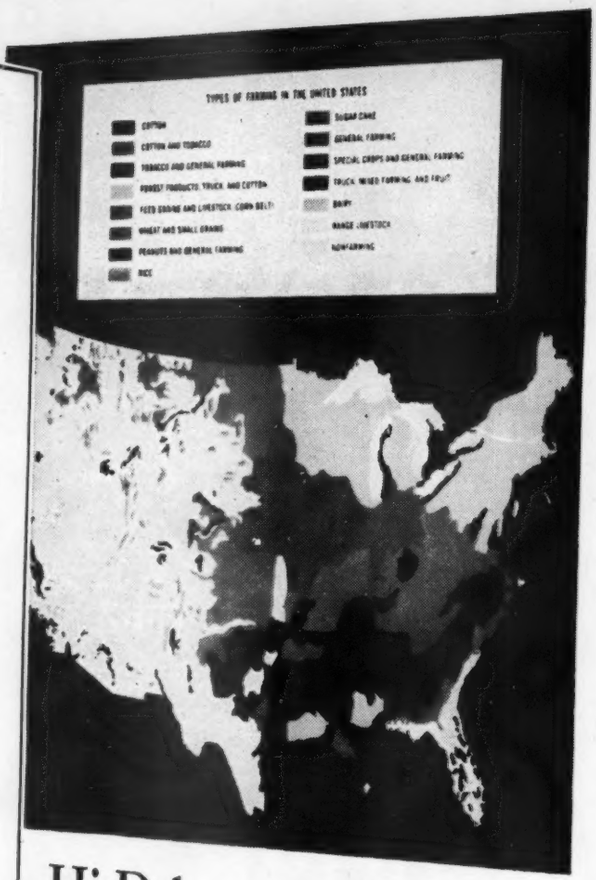

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Industry Leaders Optimistic About 1962

OUTLOOK

Continued from page 3

panies expanding into the marketing of pesticides.

Lines of communications in our industry between manufacturer and consumer are shortening. There is a move toward more integrated selling.

Broader Use of Chemicals Seen as Key to American Agriculture's Success

By John W. Hall
President
Potash Company of America
Denver, Colo.

SINCE it is customary for the fertilizer industry to make comparisons and projections on a fiscal rather than a calendar year basis, we are taking the liberty of placing the following remarks in that time area (July 1, 1961-June 30, 1962.)

John W. Hall

Our industry is subject to the whims and fancies of both government and the weather and to predict the action of either or both is hazardous. In spite of an abnormally wet, cold spring and the retirement of perhaps 25 million acres of corn and sorghum land from cultivation, bumper crops were harvested. The Department of Agriculture estimated gross farm income in calendar year 1961 will be $40 billion, an increase of $2 billion over the previous year. Further, farmers will probably spend $27 billion on production this spring, up a quarter of a billion over last spring.

Barring unfavorable weather during the spring planting season, we believe there will be an increase in the consumption of mixed fertilizers and materials during the 1961-62 season. This projection is based on the opinion government spending on farm economy will remain at a high level; impact of acreage controls will not be as great as last year and the farmer will continue his efforts toward lower production cost by the use of adequate quantities of fertilizers.

It is a well-publicized fact that Russia, Red China and the other Satellite countries have been unable to raise sufficient food and fiber to take care of the minimum needs of their population. Approximately 40% of the labor force in Russia is on farms whereas in this country about 8% is employed in agriculture. Yet with this much greater manpower and acreage, they are failing to meet the needs of their people.

The American farmer, with less manpower and fewer acres, is able by scientific farming methods and intensive cultivation which requires proper use of fertilizer to out-produce any of the other countries of the world. Successful as America is in agricultural production, statistics show the farmer today is using only one-half of the amount of fertilizer recommended by the soil scientist of the Land-Grant Colleges.

This may sound strange in view of our surpluses of farm products, but, food and fiber, in my opinion, are as much a defense weapon as planes, tanks and bombs. While we have surpluses of agricultural products, they are a safe-guard and a contributing factor to the defense of this country.

Population continues to increase in this country and throughout the world. Both the number of acres under cultivation and the number of people on farms are decreasing as America becomes more urban. This again means most scientific and intensive cultivation of the available land — hence increased consumption of fertilizer. These are the reasons we are enthusiastic about and have confidence in the industry.

Competent Salesmanship Needed to Market New And Complex Pesticides

By T. W. Brasfield
Velsicol Chemical Corp.
Chicago, Ill.

GROWERS are becoming more knowledgeable and sophisticated in their choice and use of pesticides, and salesmen are becoming more competent in their technical abilities to market such products. Most companies are quite aggressive in their educational programs aimed at the increasingly difficult farm market.

With favorable weather, farmers should anticipate one of their best years in 1962. It will be the aggressive marketers of pesticides who will share in this growth.

New products are coming in to supplement the standard pesticides. With standard items, supplemented by the newer pesticides, growers will be in a position to increase overall yields on fewer acres.

The trend of the last 15 years to shorten the marketing chain from pesticide producer to grower will continue. Dislocation of profit margins may occur when such efforts are only partially successful, but this will not slow the efforts of major producers.

Western Growers Need Additional Pesticides to Cut Weed, Insect Losses

By Ed Littooy
President
Colloidal Products Corp.
Sausalito, Cal.

FACTORS that will influence the total volume of agricultural chemical sales in the far western states for 1962 are many and complex. Situations exist in the West that differ significantly from other areas in the U.S.A.

Three crops are influenced by acreage control and price support, namely, wheat, cotton and rice. Historically, western growers react to lower acreage allotments for a given crop by a determined attempt to increase yields through intelligent use of agricultural chemicals. It is anticipated that this pattern will be intensified in 1962.

Research findings embracing the use of new chemical tools are being translated into volume sales. This is especially noteworthy in the herbicidal field. Potential here is probably the most attractive from a profit realization standpoint than in any other agricultural segment. For example, in California alone weeds exact a toll of millions of dollars according to data published by the University of California Extension service.

Unpredictable developments, including minimum insect populations, extremely high or low temperature cycles and a water shortage in certain areas are consistent unknowns always present, but nevertheless important considerations in developing a manufacturing forecast for a new year. Increased emphasis on integrated insect control programs is evident in many areas. This technology is here to stay and will play a definite part in many long range seasonal plans.

Agricultural aircraft continue to play an increasingly important role in the application of pesticides. A recent NATA summary indicates that aircraft flew 86 million acres in a given year. All too frequently a new formulation is designed that does not take into account sufficient consideration of the separate problems present in this type of equipment as contrasted to ground rigs. Frequently poor performance from a good basic chemical is the result.

Trends in western farming operations are definitely toward large units operated by management personnel, well versed in the latest scientific information pertaining to any given crop. Therefore, it becomes increasingly important that sales presentations must be prepared on a logical and somewhat technical basis in order to obtain a receptive customer audience.

Certainly one of the really prime industry objectives for 1962 should be the creation of a greatly improved public image for the entire agricultural chemical industry. All food is essentially a mixture of chemicals. Without the judicious use of our products we would quickly become part of the over 50% world population presently on a starvation diet.

Government Acreage Plans Have Helped to Stimulate Greater Use of Chemicals

By P. J. Reno
Hercules Powder Co.
Wilmington, Del.

THERE is now little doubt that the American farmer is out in earnest to raise his profits per acre through higher yields and better quality products. The realization that he can grow more on fewer acres through the proper use of pesticides and fertilizers is leading more and more producers into a careful reappraisal of all their cultural practices.

P. J. Reno

Government acreage restrictions have probably been an unwitting ally with the agricultural chemicals industry to stimulate an early adoption of adequate fertilization and pest control practices. Educational efforts by the industry designed to acquaint growers with newer methods is now finding a more receptive audience than at any time in history.

This eagerness to learn on the part of the consumer may pose a serious challenge to the agricultural chemicals industry. The urge to utilize new cost-saving chemicals may lead farmers to rush headlong into indiscriminate use of materials that have yet to win their varsity letter against tough competition.

While we in the industry know that chemicals can indeed work wonders, farmers who are poorly informed may expect far too much. The need will still exist for a sober, factual presentation of the advantages—and shortcomings—of products that may be put on the market.

Much attention has been placed on the high per acre yields that the use of chemicals can produce. However, too little emphasis has been put on what, to my way of thinking, is equally if not more important . . . the higher quality product resulting from plant protection. This is of great importance in cotton, for instance.

Proper insect control not only protects fiber from loss of quality caused by insects themselves, but allows the cotton farmer the opportunity to make his crop is fewer days, and under optimum conditions for production and harvest of high quality fiber.

Recent research has proved that cotton produced in late season is of decidedly lower quality than cotton that can be picked in September and October.

Sales, particularly of pesticides, should increase during 1962. But the industry should continue its good efforts in consumer education, technical service, and ethical promotion . . . and build on this sound foundation for an even brighter future.

Fertilizer Tonnages Stay High, Out of Proportion To National Acreage Cuts

By Anthony Cascino
Vice President
International Minerals & Chemical Corp.
Skokie, Ill.

THE OUTLOOK for fertilizer sales in the 1962 season is very optimistic. Farm economic indicators clearly point to a banner year for fertilizer nutrients—at least twice the 5.2% annual increase in the linear trend of N, P_2O_5 and K_2O from 1950 to 1961.

Anthony Cascino

Farm income in 1961 is up substantially; farmers have chalked up a fantastic new record in the yield of corn per acre; all crops together also reached a new record level in yield per acre, with wheat yields third highest and cotton yields fourth highest on record; over-all farm crop prices are up 3% and livestock prices are equal to a year ago.

Although official reports are not in, an increase in fertilizer sales is indicated in the year ended last June 30, according to reports from a number of key states and from trade sources. This is in spite of acreage cuts, which kept the increase below the 10-year average. However, acreage cuts do not cause **proportionate** fertilizer cuts; thus the indicated **increase** for 1961.

Returning to 1962, the previously-mentioned optimistic indications are reinforced by the probability of an increase in corn acreage which will more than offset possible losses in acreage of other crops. (It is quite clear that many farmers went into the 1961 acreage program only because of the late planting season.) Wheat acreage reduction is already a fact but is unimportant in terms of fertilizer sales; and while 1962 cotton acreage allotments have been shaved 2%, this could be increased by planting time.

The profits to be realized by efficient farmers who use fertilizer to the utmost for top yields are plainly enormous. This applies to all farmers, including grain farmers whether they participate in voluntary acreage control programs or not.

Whatever the farmer's acreage decision, top profits and ultimately lowest possible prices to the consumer are to be had only if he fertilizes to the optimum level.

It is up to the fertilizer industry to get down to the job of helping farmers with their profit-planning fertilizer decisions; then we will be headed for a record-smashing season.

WHAT'S NEW
IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 9500—New Hydraulic Loader

A new, light-weight, four-wheel drive loader, called the "Bobcat," is available from Melroe Manufacturing Co. The manufacturer says simplicity of construction and operation are features of the new model. It has no transmission or differential, and its direct drive is permanently lubricated and sealed. Double-acting lift and tilt cylinders have full hydraulic power. Various attachments are available for

more versatile use of the new loader, and the basic price includes a scoop bucket of the size appropriate to the kind of load to be handled. For more detailed information, check No. 9500 on the coupon and mail.

No. 9501—Continuous Mixer Catalog

Falls Industries, Inc., offers a new catalog which charts capacities, dimensions and power requirements of 14 standard size double and single shaft models of its Anthony-Design mixers. Design details are discussed, including the variable pitch blades to allow for changing retention time in the field. Two pages show 6 standard as well as special design mixers. For free copy of Mixer Catalog No. 150 check No. 9501 on the coupon and mail.

No. 9484—Bag Fabricating System

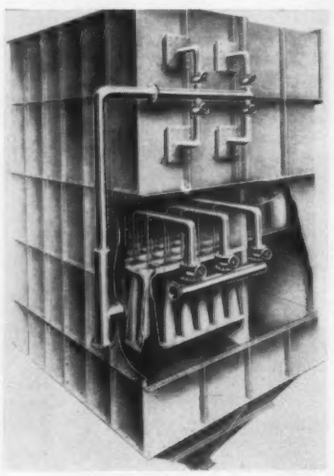
Doughboy Industries announces the incorporation of its continuous band sealer as part of the Doughboy bag fabricating system. The manufacturer says it is now possible to make case and drum liners and new, heavy duty polyethylene industrial type bags entirely automatically with their closure. The new system is said to produce up to 40 bags a minute (single web) and handle two or more narrow webs for multiple production of smaller bags. For complete details, check No. 9484 on the coupon and mail.

No. 9491—Electric Conveyor

A multi-purpose conveyor available from the A-B Farquhar Division of Conveyor Systems, Inc., is described in a new bulletin. The electric conveyor, the "Ve-Be-Veyor" (patent applied for), features a full "ruff top" belt with roller bed and positive belt guide. The unit is available in lengths of 12, 16 and 20 feet, with weights of 149, 192 and 239 lb. respectively. The manufacturer says the new conveyor is fully portable and can convey a 222 lb. distributed load horizontally or a 125 lb. load on a 30 degree incline with an ample safety factor. For copy of bulletin, check No. 9491 on the coupon and mail.

No. 9492—New Venturi Scrubber

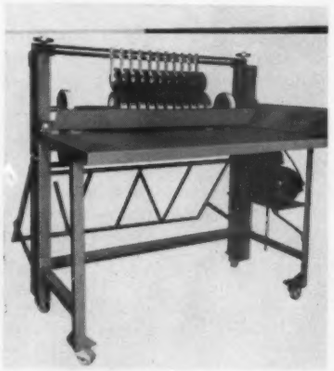
Buell Engineering Co., Inc. is manufacturing a new venturi scrubber for separating entrained solids from high temperature gases, under an exclusive U.S. license from Waagoner-Biro, Austria. Advantages claimed



for the new scrubber are low pressure drop and low water requirements. Exhaust gases are subjected to a double scrubbing action as they pass through a bank of venturis, and are said to be cleaned of dust particles as small as 0.05 micron. For detailed operational information check No. 9492 on the coupon and mail.

No. 9502—Bag and Carton Printer

A bag and carton printer for in-plant printing of private label bags has been introduced by Minneapolis Sewing Machine Co. The manufacturer says the new printer is electrical-



ly controlled, completely adjustable, and prints from one to twelve or more lines of type at the rate of 45 bags per minute. The rolls are self-inking, and ink colors available are red, violet and black. The "Minneapolis Bag and Carton Printer" is of all steel construction, powered by ⅓ h.p. motor. The standard machine will handle bags 10-44 in. long and 9-23 in. wide. For additional information and specifications, check No. 9502 on the coupon and mail.

No. 9485—King-Size Fiberglass Tanks

Fiberglass tanks in applicator and nurse tank sizes are available in 6,000, 8,000 and 10,000 gal. capacities from Tryco Mfg. Co. The manufacturer says its patented tank is cor-

rosion-proof, and recommended for storage of mixed fertilizer solutions, phosphoric acid, or other non-pressure solutions. A variety of openings and fittings are available, plus transportation in the manufacturer's trucks to site of installation. For complete details, check No. 9485 on the coupon and mail.

No. 9489—Liquid Fertilizer Equipment

A new multi-purpose liquid fertilizer and anhydrous ammonia applicator is being marketed by Rex, Inc. The optional metering system offered includes choice of air compressor,

ground-drive 'LF' metering pump or roller pump. Tanks will be available in steel, aluminum, fibreglass, and for special uses, stainless steel. Booms are available in a choice of materials in both wet and dry types and adaptable to 10 in., 20 in. and 40 in. spacings with swaths of 21 ft., 27 ft. and 30 ft. Tool bars are offered in 3-row and 5-row length. For further information check No. 9489 on the coupon and mail.

No. 9490—Pulverizing Machinery Bulletin

A new 12-page, 2-color bulletin describing the firm's complete line of grinding, air conveying and dust collection equipment and accessories has been released by Pulverizing Machinery Co. For copy of Bulletin 571-3, check No. 9490 on the coupon and mail.

No. 9495—Wireless Intercom

A new plug-in, 8-channel wireless intercom system which permits 4 separate intercom conversations at

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- ☐ No. 9484—Fabricating System
- ☐ No. 9485—Fiberglass Tanks
- ☐ No. 9486—Lining Manual
- ☐ No. 9487—Automatic Control
- ☐ No. 9489—Fertilizer Equipment
- ☐ No. 9490—Bulletin
- ☐ No. 9491—Electric Conveyor
- ☐ No. 9492—Scrubber
- ☐ No. 9493—Air Sprayer
- ☐ No. 9494—Self-Lubricating Chain
- ☐ No. 9495—Wireless Intercom
- ☐ No. 9499—Fertilizer Pumps
- ☐ No. 9500—New Hydraulic Loader
- ☐ No. 9501—Mixer Catalog
- ☐ No. 9502—Bag, Carton Printer
- ☐ No. 9503—Pulverizer-Classifier

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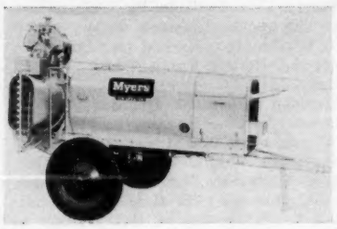
the same time and requires no laying of cable, is available from Feiler Engineering and Manufacturing Co. Two models, the "All-Master" and "Master-Staff" are offered. The manufacturer lists the following features: Automatic volume control, up-front static eliminator, noise reduction circuits, and attractive styling. For complete information check No. 9495 on the coupon and mail.

No. 9493—New Air Sprayer

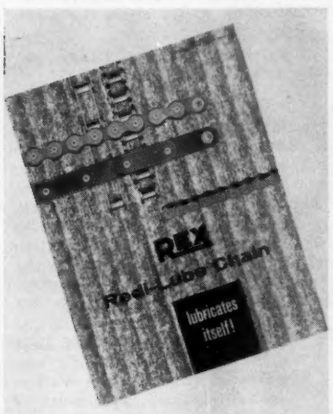
A new turntable field crop air sprayer said to cover over 100 acres a day and give full directional control of spray solutions in a full 210-degree spraying arc, is offered by F. E.



Myers & Bro. Co. The maker also offers the sprayer turntable attachment for mounting on most 400-gallon or larger tank sprayers for converting a boom or gun sprayer into an air sprayer. Check No. 9493 on the coupon and mail for further information.

No. 9494—Self-Lubricating Chain

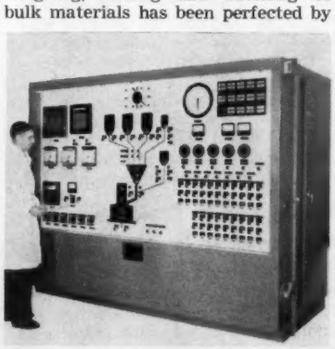
Production of a self-lubricating chain, called the "Rex Redi-Lube," is announced by Chain Belt Co. The new chain is said to be designed espe-



cially for drives and conveyors that can't be lubricated regularly and to provide protection against dust, dirt and moisture. It is interchangeable with A.S.A. roller chain. A heavy, oil-impregnated, sintered steel bushing replaces the conventional roller and bushing of standard roller chain. For further information check No. 9494 on the coupon and mail.

No. 9487—Automatic Control for Scales

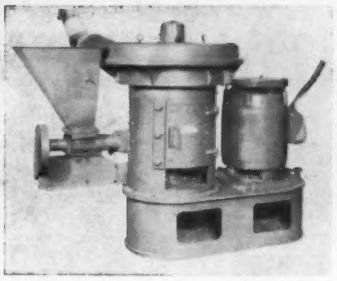
A new automatic control panel for weighing, mixing and batching of bulk materials has been perfected by



Thayer Scale Corp. The manufacturer says as many as five separate ingredients can be weighed and apportioned at high speed. Similar units may be designed for use in chemical and fertilizer fields. A key feature of the system is the main scale, a high speed precision unit. The panel incorporates automatic alarms for low bin levels, for weight variations, fan failure and other eventualities. In addition, a number of standard controls are included on the panel. For details check No. 9487 on the coupon and mail.

No. 9503—New Pulverizer-Classifier

A newly developed air attrition mill for reducing friable materials to subsieve size and classifying them in the same operation is introduced by the Bauer Bros. Co. The machine, called "The Hurricane Pulverizer-Classifier," is described as a "2 in 1" device said to provide accurate quality control and have an unusually high operating capacity. Among typical applications



recommended are the processing of chemicals and insecticides. For copy of Bulletin G-4-A with complete details, check No. 9503 on the coupon and mail.

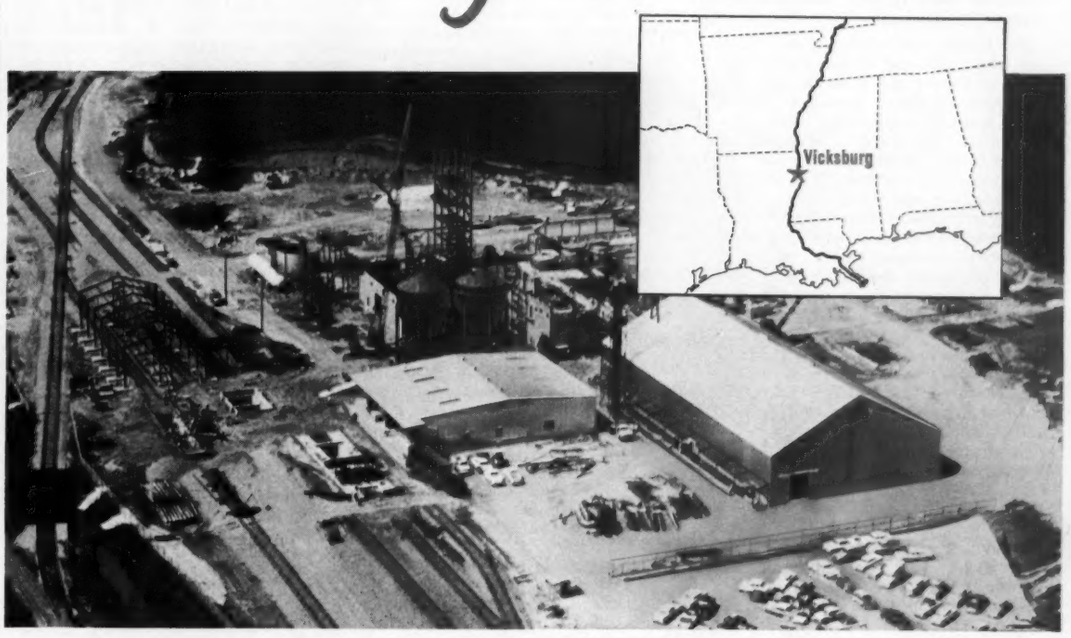
No. 9486—Steel Container Lining Manual

A brochure of information on lining materials for steel containers, with sample lined steel chips, is offered to pail and drum users by Bennett Industries, Inc. Uses for clear and pigmented linings in epoxy and phenolix types are described and advantages and limitations of the various types are noted. For free copy, check No. 9486 on the coupon and mail.

No. 9499—Liquid Fertilizer Pumps

A new bulletin, No. 850-B, is available from Deming Division, Crane Co. It describes in detail Crane pumps especially adapted for field application metering, nurse tank and transfer service, load out or storage transfer service. Complete specifications on each type are given. Charts are included showing gallons per minute at various pressures, as well as power requirements. For copy, check No. 9499 on the coupon and mail.

Coming Soon...



Aerial view of the new Vicksburg plant of Southwest Potash Corporation—now under construction.

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Round Table Speakers Tell How to Handle Liquid and Dry Materials

ROUND TABLE

Continued from page 6

air, the positive flow, and a combination of the two. The choice of which to use depends upon a number of factors, including costs and the situation at hand. Power requirements are about the same, but initial costs favor the negative system. This type of set-up is advantageous when materials must be gathered from a number of locations and directed to a single point or only a few points.

In the reverse case, transferring materials from a single bin or point to numerous ones, the positive flow of air is indicated. A combination might be used when materials are gathered from many points to be distributed to numerous places.

He presented a case history of a fertilizer plant which moved 4,000 tons of mixed fertilizer from bags to bulk storage bins from which the material was later loaded into trucks for delivery.

The same plant also received muriate of potash and triple superphosphate in hopper cars, and through its pneumatic system, unloaded 25,000 lb. an hour, thus emptying the car in four hours. The material was sent to bins and from there to trucks.

In this case history, Mr. Fischer described the system as being satisfactory, with fewer maintenance problems than had been experienced with mechanical devices. The company built a pit under the rail, and the car would be spotted with hopper over the rotary valve so material may be put under high pressure and sent directly to the bins. A relatively small amount of air is needed, he said. The line described was 157 ft. in length, and had five changes of direction and a 37 ft. vertical rise.

Conveyor tubes, he pointed out, are flexible and can go anywhere . . . up, down, through and around walls and floors. Power requirements are greater than that of conventional mechanical conveyor equipment, he said, with some 30 h.p. being needed.

Some breakage of particles may be expected, the speaker said, since the material travels at nearly 60 m.p.h. and hits the bends in the pipe with considerable force. However, breakage and dust were not a problem in the plant described in the case history.

Although the materials were not broken, the abrasion and friction does tend to wear out elbows and other portions of pipes where unusual striking occurs. The remedy for this is either to slow down the system by using less air, or putting more material in the line; or to beef up the system by use of heavier pipes. The greater initial cost of doing the latter is offset by longer life and less maintenance expense, he said.

In reply to a number of questions from the floor, Mr. Fischer reported that the largest size materials handled in pneumatic conveying systems comprises particles up to 1½ in. in diameter. He said that the system can handle fragile products without exceeding tolerable limits of breakage.

One questioner from the audience asked whether the system would tend to cool hot materials en route. Mr. Fischer replied that the pneumatic system has little capacity for heat transfer, unless the trip through the pipes is unusually long.

Unloading Bulk Solids

New methods of transportation and unloading of bulk solid materials were discussed in a paper by R. M. Geisenheyner, Butler Mfg. Co. The speaker projected on the screen photographs and schematic drawings of a tank truck trailer of 850 cu. ft. capacity, which unloads through air pressure. He said that the unloading procedure is simple, rapidly stabilized to achieve optimum flow, and does not require constant attention by the operator during unloading.

A gasoline engine on the rear of the vehicle compresses the air directed into the trailer tank, thus pressurizing it. With the product so aerated, a portion of the air is diverted to the unloading manifold connecting each of the several hoppers to the unloading hose. There are no moving parts on the interior of the vessel, Mr. Geisenheyner said.

Inside dimensions of pipes used in unloading are usually 4 in., he said. Bends in the pipes are made with as much radius as possible. "Dry bulk products are regularly being delivered into storage silos in excess of 150-ft. elevation, or 200-ft. horizontal distance, without problems," he told the group. "The rate of unloading will vary with the vertical and horizontal distances, and also with the product involved," he added.

Weighing Has Unusual Significance in Trade

The afternoon session of Wednesday, Nov. 8, was moderated by J. E. Reynolds, Jr., Davison Chemical Co., Division W. R. Grace & Co., Baltimore, Md. The fundamentals of weighing were covered by Arthur Sanders, Scale Manufacturers' Assn., Washington, D.C. He emphasized the necessity of an increased awareness of the benefits to be had from accuracy in weighing fertilizers, as well as the hazards involved in errors of either gross overweights or product shortages.

He reminded his fertilizer manufacturer listeners that they purchase raw materials by weight, process them by weight, and sell them by weight. Every plant, therefore, needs checking points many times during the course of manufacturing, as well as a basic check point when raw materials are received. Good control, he told the Round Table assembly, is essential to making profits and necessary to the efficient operation of the modern fertilizer plant.

Because of the large tonnages of materials handled in the fertilizer industry, he said there is no such thing as "small" errors in weighing. As an example, he said that a plant making 25 000 tons a year and averaging an extra pound of fertilizer in each 100 lb. put in bags, would lose around $15,000 a year. He added that errors in weights of incoming materials can also be costly. Such short weights are not made purposely, he emphasized, but the loss is real just the same.

Weighing errors in the case of finished goods are costly regardless of whether the weight is over or under. Company good will is the price of shortages, as well as the likelihood of fines for underweight goods. On the other hand, overweights mean little to the user, but can cost the producer much of his margin of profit.

Mr. Sanders said that losses from off-weights may amount to as much as losses from fire, but there is no insurance for the former. The only protection, he said, is an alert management which will insist upon accuracy and efficiency to increase profits for the firm.

Four Experts Discuss Handling Liquid Materials

Elmer Perrine, Nitrogen Division, Allied Chemical Corp., New York, was moderator of a panel discussing the handling of liquid materials. Appearing on this portion of the program was James W. Lewis, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.; Ben T. Anderson, Sinclair Petrochemicals, and Walter W. Whitlock, Texaco, Inc.

How to Cope with Salt-Out Problems in Pipes, Tanks

In his discussion of handling problems, Mr. Lewis said there is a need for better understanding of the physical characteristics of ammoniating solutions. These properties include the specific gravity, salting-out temperature and vapor pressure. The first, he said, is used in calibration of weigh tanks and meters to determine proper amounts of solution in a given formula.

Salting-out temperatures, however, are another matter, he said. Sometimes this property is referred to as the "freezing point," whereas ammoniating solutions have no true freezing point. At lower temperatures, nitrogen solutions will finally reach the point where the solids will begin to come out of solution and crystallize. However, at this point, the material is still a liquid and can be handled as such. But a continuing lower temperature will bring more and more of the salts out of solution.

Trouble may be experienced sometimes, he said, when a line full of solution is isolated during a temporary work stoppage. Salting-out can occur even though the ambient temperature is above the salting-out temperature. This could be caused by loss of free ammonia, or the cooling effect of expanding ammonia which would cause a drop of temperature in the solution. If not corrected, these conditions could plug the line.

Vapor pressure problems are the most troublesome, he said. Since ammonia will dissolve readily in water, it can reach the saturation point and then escape as gas. Vapor pressure, therefore, he said, is defined as "the tendency exerted by a dissolved gas to come out of solution at a given temperature and it is measured in terms of pounds per square inch on a pressure gauge." Ammoniating solutions work in this manner, he said.

If pressure above a nitrogen solution is dropped to some point lower than its vapor pressure, bubbling will occur, Mr. Lewis explained. This is what happens when bubbling or gassing occurs in a meter. The pressure upon the solution as it passes through the meter is less than the vapor pressure. Erratic readings result.

"The only way to prevent this is to have adequate pressure on the solution as it passes through the meter," he went on. "In order to assure adequate pressure, we must consider the entire system in which the solution is stored and transferred," the speaker said. He then named three essential points in such a system which determine how much pressure is needed. These were listed as follows:

1. Vapor pressure of the solution at the existing temperature.

2. Hydrostatic head, which is the pressure exerted by a static column of the solution equal to the vertical height of the meter above the storage tank.

3. Frictional pressure losses due to flow through the line.

Applying these points to a specific case, Mr. Lewis asked the audience to assume that the solution in a tank car or storage tank is being metered by air pressure to an ammoniator thirty feet above the tank. The minimum amount of pressure on the tank needed to move the solution and to prevent bubbling would be the sum of the vapor pressure, the hydrostatic head and the line loss. In this case, the total is 25 psig, so if one attempts to operate with less than 25 psig on the tank, bubbling and erratic flow in the meter are certain. To be absolutely sure, a pressure of 30 psig should be used as a safety factor.

The same considerations exist where a pump is used to transfer the solution to a meter, he said. Here, however, the pump supplies most of the pressure and it is necessary only to supply the desired volume of solution to the pump suction at a pressure higher than the vapor pressure.

In closing, Mr. Lewis urged his listeners to consult manufacturers' charts for physical properties of the solution to be used and find out what the vapor pressure really is.

He also advised to have adequate compressed air to move the solution from the storage tank to the pump or directly to the meter as the case may be, and be sure the tank is designed to handle whatever pressure is necessary.

"Install pressure gauges at critical points and keep them in good condition," he added. Also, a thermometer in the solution line removes guesswork as to temperature, he concluded.

Utilize Vapor Pressure Whenever It Is Available

Ben T. Anderson, Sinclair Petrochemicals, reiterated the importance of vapor pressure in transferring solutions, but added that additional energy or "working pressure" must be introduced into the system. That

Turn to ROUND TABLE page 26

ROUND TABLE GROUP RE-ELECTS COMMITTEEMEN

Dr. Vincent Sauchelli, chemical technologist, National Plant Food Institute, Washington, D.C., was re-elected chairman of the Fertilizer Industry Round Table by acclamation at the recent meeting of the group in Washington. Named vice chairmen of the Round Table were: Joe E. Reynolds, Jr., production manager, Davison Chemical Division, W. R. Grace & Co., Baltimore, Md., and Albert Spillman, general manager, Fertilizer Manufacturing Cooperative, Inc., Baltimore. Dr. H. L. Marshall, chief chemist, Olin Mathieson Chemical Corp., Baltimore, will remain as permanent secretary-treasurer of the Round Table.

The motion to re-elect the present heads of the Round Table was made by Wayne W. King, vice president, W. S. Tyler Co., Baltimore.

Chief Kay-Two-Oh and the Pee-Cee-A tribe have but two products: potash and service. The Chief feels that an important part of this service is to remind customers that January 31 is the last day on which potash can be shipped at lower prices under the graduated price scale. ☐ "Order now. Save heap much wampum," says the Chief. ☐ Canny buyers know that it's good business to plan ahead and keep warehouses full of Pee-Cee-A products. The motto of good Scouts, both Boy and Indian, is: "Be prepared!"

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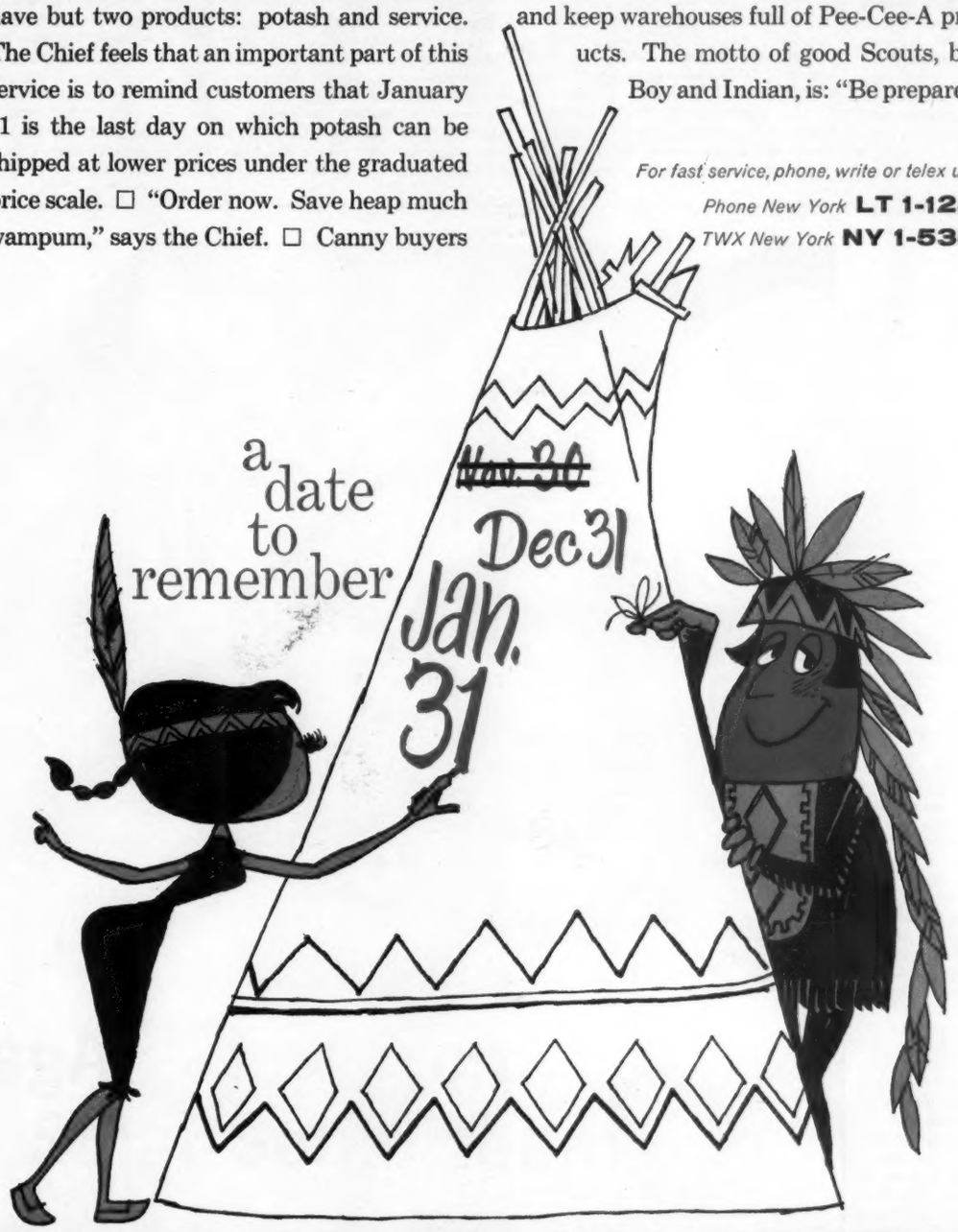

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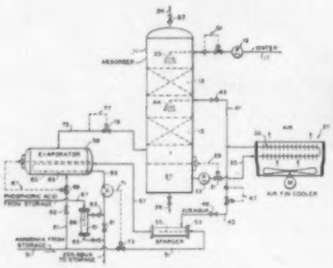
PRODUCTION PROCESS PATENTS

3,008,801

Production of Aqua Ammonia and Ammonium Phosphate. Patent issued Nov. 14, 1961, to Loyd W. Adams, Bartlesville, Okla., assignor to Phillips Petroleum Co. A process for producing a concentrated aqua ammonia solution from liquid ammonia and water comprising the steps of vaporizing said liquid ammonia, absorbing the so-produced ammonia vapors in water thereby producing a heated dilute aqua ammonia, cooling the heated dilute aqua ammonia by indirect heat exchange, dividing the cooled dilute aqua ammonia into two portions, returning one portion to the absorption step as at least a portion of the absorbent water, separately injecting additional liquid ammonia into the other portion of the cooled dilute aqua ammonia thereby producing a hot concentrated aqua ammonia, passing this hot concentrated aqua ammonia in indirect heat exchange with the above-mentioned vaporizing liquid ammonia thereby providing latent heat for the vaporizing step and simultaneously cooling the hot concentrated solution of aqua ammonia, and withdrawing the cooled concentrated aqua ammonia as the product of the operation.



A process for producing an aqueous ammonium phosphate solution from liquid ammonia, phosphoric acid and water comprising the steps of vaporizing said liquid ammonia, absorbing the so-produced vaporous ammonia in water thereby producing a warmed dilute aqua ammonia, cooling the warmed dilute aqua ammonia by indirect heat exchange, dividing the cooled dilute aqua ammonia into two portions, returning one portion to the absorption step as at least a portion of the absorbent water, separately injecting additional liquid ammonia into the other portion of the cooled dilute aqua ammonia thereby producing a heated concentrated aqua ammonia, cooling this heated concentrated aqua ammonia by passing same in indirect heat exchange with the above mentioned vaporizing liquid ammonia whereby latent heat is provided and the heated concentrated aqua ammonia is simultaneously cooled, injecting phosphoric acid into the cooled concentrated aqua ammonia thereby producing aqueous ammonium phosphate, and removing this aqueous ammonium phosphate as the product of the operation.

3,007,773

Anticaking Ammonium Nitrate and Method of Making. Patent issued Nov. 7, 1961, to Paul O. Marti, Jr., Munster, Ind., assignor to Standard Oil Co., Chicago, Ill. Ammonium nitrate particles coated with a comminuted agent selected from the class consisting of iron-iron cyanide, cobalt-iron cyanide, copper-iron cyanide and manganese-iron cyanide, which composition is characterized by essentially free-flowability at atmospheric humidity and by a storage stability substantially that of dynamite grade ammonium nitrate.

3,006,725

Process for Recovering Ammonia as a Salt from Coke Oven Gas. Patent issued Oct. 31, 1961, to Ormond L. Henry, Allison Park, Pa., assignor to Koppers Co., Inc. A process for the recovery of the ammonia from coke oven gas as the salt, diammonium phosphate, and as the salt, ammonium sulfate, which comprises spraying said gas with a first solution which is comprised of free phosphoric acid and diammonium phosphate and which is saturated with respect to its content of diammonium phosphate and has a pH value of 6.5 to 7 to absorb ammonia from said gas so as to form a product consisting essentially of diammonium phosphate crystals, recovering said diammonium phosphate crystals, removing from said gas substantially all of the first solution which may be entrained therein, said gas still containing some residual ammonia because of said first solution being inherently incapable of absorbing all of the ammonia from said gas, thereafter spraying said gas with a second solution which is comprised of free sulfuric acid and ammonium sulfate and which is saturated with respect to its content of ammonium sulfate and has a sulfuric acid content of 2 to 8% to absorb the residual ammonia to form a product consisting essentially of ammonium sulfate crystals, and recovering said ammonium sulfate crystals.

3,006,753

Method of Making Mixed Fertilizers Containing Vermiculite. Patent issued Oct. 31, 1961, to Edward W. Harvey, Cream Ridge, N.J., assignor to Allied Chemical Corp., New York. The method of preparing a mixed fertilizer which comprises mechanically mixing acidic phosphate fertilizer ingredients with expanded vermiculite, premixing urea and a polymethylol urea concentrate, preheating said mix to about 50°C., incorporating the resulting slurry into the mechanically mixed acidic fertilizer ingredients to form ureaform in situ and ammoniating the resulting mixture to partially neutralize the mixture and obtain a mixed fertilizer product with the ureaform uniformly distributed in the vermiculite, said

New Solar nitrogen plant at Joplin, Missouri, dedicated to serving your nitrogen needs still better

The new Solar nitrogen plant at Joplin, Missouri, now extends Sohio service throughout the central part of the United States. The plant, constructed by Solar Nitrogen Chemicals, Inc., enables Sohio (acting as sales agent for Solar) to better serve the nitrogen needs of the fertilizer industry. It substantially increases availability of Solar nitrogen materials during peak seasons.

If you're a regular customer, you know that continuous improvements in service, delivery and product are SOP of the Solar-Sohio team. This leadership has contributed many "firsts" in the fertilizer industry during the past few years. In addition to the new Joplin plant, they have pioneered these improvements in service:

- First to give truck delivery of solutions and anhydrous.
- First to give bulk truck delivery of urea.
- A leader in the use of pressure, aluminum tank cars for nitrogen solutions.
- First to build large bulk storage to meet on-season demand of the industry.
- Further increased on-season availability by increasing capacity of Lima ammonia plant, urea unit and nitric acid unit.

Helping you solve fertilizer formulation problems is another area where the Solar-Sohio team can point to impressive achievements. For example, they...

urea and polymethylol urea concentrate being added in such proportions that the total mol ratio of urea to formaldehyde in the resultant mixture lies within the range of 1.3-2.

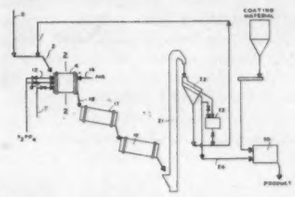
3,006,754

Production of Superphosphate Fertilizers. Patent issued Oct. 31, 1961, to Robert E. Sullivan, Anaconda, Mont., assignor to the Anaconda Co. A process for the production of a treble superphosphate having an available phosphate content equivalent to at least about 50% P_2O_5 by weight which consists essentially of reacting phosphoric acid at a concentration equivalent to from about 40 to about 42% P_2O_5 by weight in a reaction vessel with a crushed mineral selected from the group consisting of burned lime and limestone in proportions such that the P_2O_5/CaO ratio in the reaction mixture is between 2.55 and 2.65, and discharging the mixture while still fluid from the reaction vessel onto a moving conveyor, the discharged product solidifying while moving on said conveyor to form a solid treble superphosphate in which the available phosphate content is equivalent to at least about 50% P_2O_5 by weight and in which, on a dry basis, the P_2O_5/CaO ratio is between 2.4 and 2.5 and the residual unreacted phosphoric acid content is less than about 2% by weight.

3,005,696

Process for Production of Ammonium Phosphate Fertilizers. Patent issued Oct. 24, 1961, to Travis P. Hignett, Sheffield, and Milton R. Siegel, Robert S. Meline and Glenn M. Blouin, Florence, Ala., assignors to Tennessee Valley Authority.

A one-step continuous process for the production of granular fertilizer of about 15-50-0 grade which comprises continuously introducing fines of less than about 12-mesh size recycled from a later mentioned sizing step into the upper end of a horizontally inclined rotating drum; continuously introducing impure phosphoric

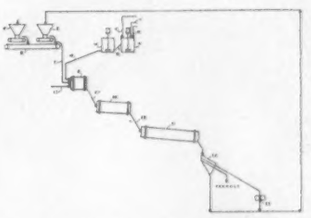


acid into the upper end of said rotating drum at a controlled rate; continuously introducing ammoniating fluid into the upper end of said drum at a rate to neutralize the phosphoric acid to a degree such that approximately equal proportions of monoammonium phosphate and diammonium phosphate are formed; maintaining a bed of rolling discrete particles in the drum; continuously withdrawing granulated material from the lower end of the drum at a temperature in the range from about 150°F. to 210°F.; supplying substantially all of the heat for maintaining said temperature range from the heat of reaction of the reactants; maintaining the moisture content of granulated material leaving the drum in the range from about 1.5% to 7.0%; sizing the withdrawn granular material; separating the fine portion thereof; separating a portion of product-size material; crushing the remaining portion of product-size material and all the over-size material and recycling said crushed material together with said fine portion as fines to the rotating drum.

3,005,697

Nitric Phosphate Process. Patent issued Oct. 24, 1961, to David McKnight, Florence, Ala., Frank P. Achorn, Pascagoula, Miss., and Robert S. Meline, Florence, Ala., assignors to Tennessee Valley Authority.

A process for the production of granular nitric phosphate fertilizer which comprises extracting phosphate



rock in particles at least fine enough to pass a standard 20-mesh screen, for about 20 to 30 minutes, with nitric acid having a concentration of about 57% to 60% HNO_3 in quantity sufficient to form a fluid slurry; introducing cool dry fines recycled from a later sizing step into a rotating drum; maintaining a bed of rolling solid particles comprising recycled fines in the drum; passing the slurry to the drum by gravity flow; distributing the slurry on the full length of the bed of rolling solid particles in a reciprocating spray in quantity sufficient to moisten the solid particles; introducing an ammoniating fluid beneath the bed of rolling solid particles in quantity sufficient to substantially neutralize the slurry; raising the temperature of the bed to about 130°F. to 150°F. by heat of reaction; controlling the temperature of the bed by controlling the proportion of fines recycled; withdrawing at least partially granulated nitric phosphate fertilizer from the drum; drying, cooling, and sizing the withdrawn material; and recycling fines to the rotating drum.

3,005,849

Urea Synthesis Using Excess Ammonia. Patent issued Oct. 24, 1961, to Eiji Otsuka, Fujisawa City, Japan, assignor to Toyo Koatsu Industries, Tokyo, Japan.

In a solution recycle process for the synthesis of urea from carbon dioxide and excess ammonia wherein one mol of CO_2 and 4-5 mols of NH_3 are reacted in a reaction zone at temperatures of the order of 180°C. and pressures of the order of 280 atmospheres to form a urea melt and wherein unreacted NH_3 and CO_2 separated from the urea melt are recovered and re-utilized in the urea synthesis; the steps comprising (a) subjecting urea melt withdrawn from said reaction zone to a first reduced pressure for separating therefrom a first gaseous mixture comprising NH_3 in excess and CO_2, (b) scrubbing said first gaseous mixture with water to provide respective pure NH_3 and an aqueous ammonium carbonate solution, (c) liquefying the said pure NH_3 for delivering under pressure for reuse in the reaction zone and passing the aqueous ammonium carbonate solution to a mixing chamber, (d) subjecting the urea melt from which the said first gaseous mixture has been separated to a second and further reduced pressure for separating therefrom a second gaseous mixture comprising NH_3 and CO_2 and H_2O

Photographed July 29 before completion.

something new from the Solar-Sohio team

- Pioneered research in liquid fertilizer solubility.
- Devised practical but accurate shortcuts for methods of liquid formulation . . . i.e., triangulation formulation, formulation pads.
- Led in researching nitrogen solutions solubility and vapor pressure.
- Pioneered special high fixed-to-free nitrogen solutions for dry and liquid manufacturing for complete fertilizers.
- Led in promoting the use of urea-ammonium nitrate solutions to reduce formulation costs of liquid fertilizers.

We believe this record of leadership shows two especially significant facts about our company.

First is a genuine feeling of responsibility to serve your nitrogen needs as completely and as efficiently as we know how. Second is a thorough knowledge of agriculture . . . a real insight into your fertilizer formulation needs.

Right now is a good time to line up your future nitrogen needs. Call or write your "Man from Sohio" for a full line of Solar nitrogen products, including all grades of urea, ammonia and nitrogen solutions. Two plant locations assure dependable supply, quick delivery.

SOHIO

SOLAR NITROGEN CHEMICALS, INC.
Sohio Chemical Company, Agent
Sales Offices: Lima, Ohio and Kansas City, Mo.
Plants at: Lima, Ohio and Joplin, Mo.

A-12

vapor, (e) dehumidifying the said second gaseous mixture for reducing the H_2O content thereof, and (f) introducing the dehumidified second gaseous mixture into the ammonium carbonate solution in the mixing chamber for absorption thereby for producing an ammonium carbonate solution of low H_2O content for delivery under pressure for use in the reaction zone.

3,005,687

Process for the Production of Sulfuric Acid. Patent issued Oct. 24, 1961, to Marvin J. Udy, Niagara Falls, N.Y., assignor to Strategic Materials Corp., New York. In a process for the production of sulfur trioxide by conversion of sulfur dioxide, the improvement that comprises passing a gas consisting essentially of sulfur dioxide in moist form into contact with a substance selected from the group consisting of quartz, iron oxide, alumina, titania, zinc oxide, copper oxide, cobalt oxide and nickel oxide, while said substance is maintained at a temperature of about 750°C., together with a free oxygen-containing gas and carbon dioxide, and recovering mixed sulfur dioxide-sulfur trioxide gases containing sulfur trioxide in a substantial excess.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Design of plant growing out of test tube, for fertilizers. Filed Feb. 20, 1961, by Eli Lilly & Co., Indianapolis, Ind. First use Jan. 25, 1961.

Success, in capital letters, for lawn fertilizer. Filed Feb. 28, 1961, by L. Teweles Seed Co., Milwaukee, Wis. First use Feb. 6, 1961.

Acti-Dione-Captan, in capital letters, for rose and flower fungicide to control black spot on roses and mildew on ornamentals. Filed Dec. 19, 1960 by The Upjohn Co., Kalamazoo, Mich. First use Dec. 2, 1960.

barC, in lower case with a capital "C," for turf fungicide. Filed March 10, 1960, by The Upjohn Co., Kalamazoo, Mich. First use Feb. 18, 1960.

Flower Guard, in capital letters, for combination insecticide, fungicide and miticide. Filed Dec. 7, 1959, by Shulton, Inc., Clifton, N.J.

2-Way, in capital letters, for insecticides, rodenticides and herbicides. Filed Aug. 1, 1960, by Nash & Kinsella Laboratories, Inc., St. Louis, Mo. First use March 13, 1942.

Myzon, in capital letters for insecticides and rodenticides. Filed Aug. 11, 1960, by Gray Realty Corp., Myzon Laboratories Div., Chicago, Ill. First use on or about May 31, 1960.

Act 1 of a Beautiful Lawn, in hand-drawn letters, for complete fertilizer. Filed Feb. 7, 1961, by Hi-Yield Fertilizer Co., Bonham, Texas. First use June 25, 1960.

RP, with letters enclosed in oval, for insecticides, fungicides and a number of industrial chemicals. Filed Dec. 2, 1960, by Societe des Usines Chemiques Rhone - Poulenc, Paris, France.

Bakthane, in capital letters, for insecticide. Filed Nov. 16, 1960, by Rohm & Haas Co., Philadelphia, Pa. First use on or about Nov. 7, 1960.

G-73, for concentrated plant food. Filed Aug. 29, 1960, by Hoff Chemical Corp., Flat Rock, Mich. First use May 24, 1960.

Hardi-Brand, artistic diamond-shaped design, for agricultural chemicals comprising insecticides, fungicides and fertilizers. Filed Dec. 30, 1960, by E. K. Hardison Seed Co., Nashville, Tenn. First use, 1933.

Vacate, in capital letters, for herbicide. Filed March 8, 1961, by Diamond Alkali Co., Cleveland, Ohio. First use Feb. 7, 1961.

A Diamond Chemical, in capital letters, for agricultural chemicals, namely pesticides and other industrial chemicals. Filed March 24, 1961, by Diamond Alkali Co., Cleveland, Ohio. First use Aug. 16, 1957 on basic alkali products and as early as April 1, 1922 on word "Diamond."

CPA in capital letters, for fertilizer and plant food. Filed March 3, 1961, by Cotton Producers Assn., Atlanta, Ga. First use 1955.

Barnett Brand, in capital letters, for insecticides and chlordane concentrates for manufacturing purposes only. Filed Aug. 13, 1959, by Charles N. Barnett, doing business as Barnett Chemical Products Co., Philadelphia, assignee of Elizabeth D. Barnett, Barnett Chemical Products Co., Philadelphia. First use in 1935.

Dickory Dock and Jigs-Up, in capital letters, for rodenticide and insecticide, respectively. Filed Jan. 16, 1961, by The Garden Protector Corp., Revere, Mass. First use Sept. 9, 1960.

Design of plant growing from retort, for chemicals for garden and agricultural use, namely, a herbicide. Filed Feb. 20, 1961, by Eli Lilly & Co., Indianapolis, Ind. First use Jan. 25, 1961.

Key Green, in capital letters, for plant fertilizer. Filed March 27, 1961, by Nutrilite Products, Inc., Buena Park, Cal. First use July 3, 1959.

Organagro, in capital letters, for compost. Filed Aug. 12, 1960, by the Erda Corp., Pine Plains, N.Y. First use June 11, 1960.

Life, in italic letters, for fertilizers. Filed April 18, 1961, by the Newcomer Corp., Columbia, Mo. First use March 8, 1961.

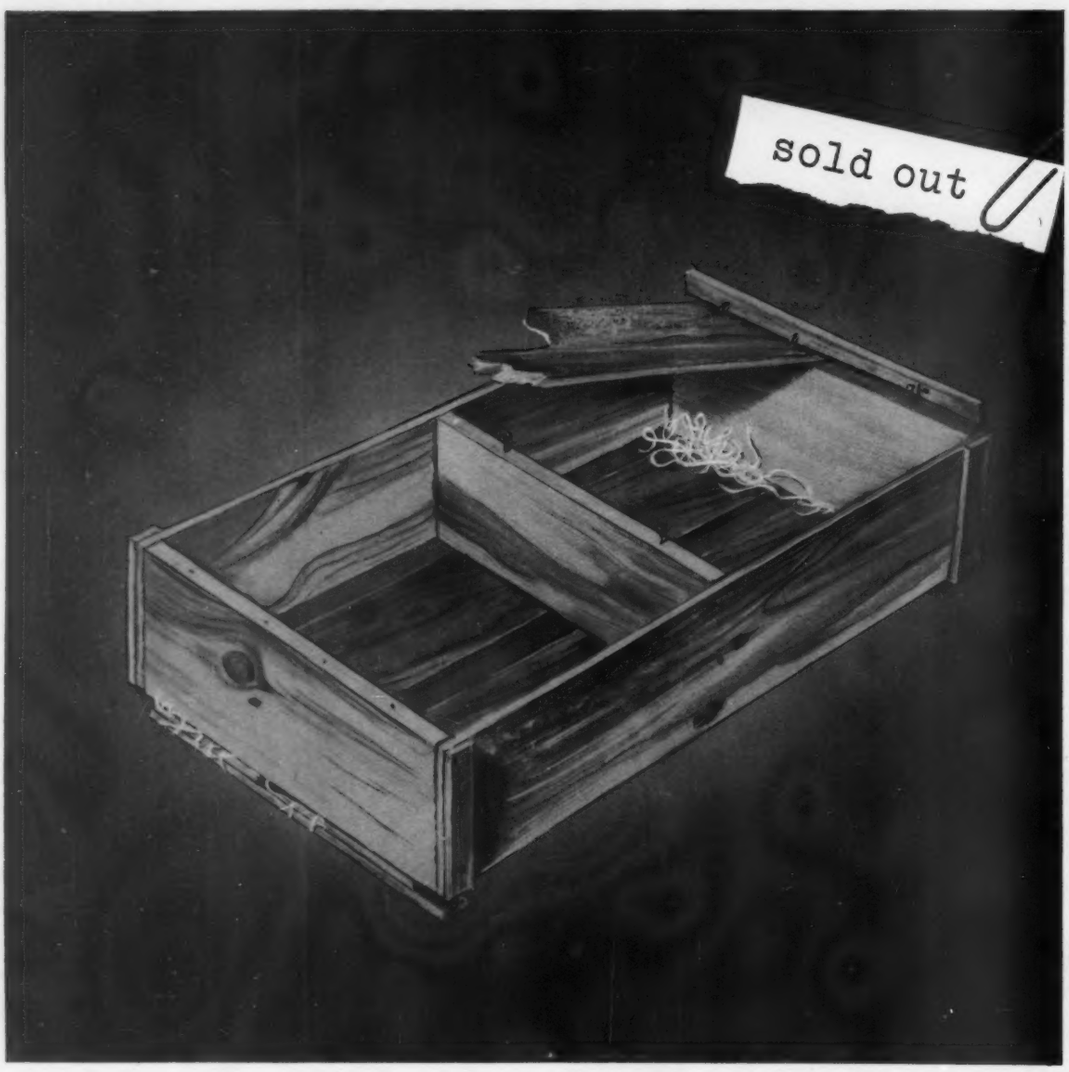
Petunia-Lizer, in capital letters, for fertilizer. Filed Feb. 21, 1961, by Meryl L. Stoddard, Flint, Mich. First use Feb. 9, 1961.

Blue Chip, in capital letters, for fertilizer compound. Filed Sept. 21, 1960, by Hercules Powder Co., Wilmington, Del. First use Feb. 18, 1960.

Barrier, in capital letters, for crabgrass killer. Filed Feb. 28, 1961, by L. Teweles Seed Co., Milwaukee, Wis. First use Feb. 6, 1961.

Zinc-El-Izer, in hand-drawn letters printed on an upward slant, for fertilizer. Filed March 20, 1961, by Bennett Chemical Co., Denver, Colo. First use Feb. 16, 1960.

Finish, in capital letters, for crabgrass killer. Filed Feb. 28, 1961, by L. Teweles Seed Co., Milwaukee, Wis. First use Feb. 6, 1961.



Because the fruit and vegetable crops were treated with

TRIANGLE BRAND COPPER SULFATE

Regular or basic copper sulfate should be mixed in insecticide-fungicide sprays and dusts to insure appetizing, attractive fruits and vegetables that consumers "reach for."

When used in fertilizers, Triangle Brand Copper Sulfate helps to enrich the soil, resulting in healthy, profitable crops.

Help your customers produce more profitable crops. Use regular or basic Triangle Brand Copper Sulfate in your fertilizer and insecticide-fungicide formulations... it will mean more money in your pocket!

phelps dodge refining corporation

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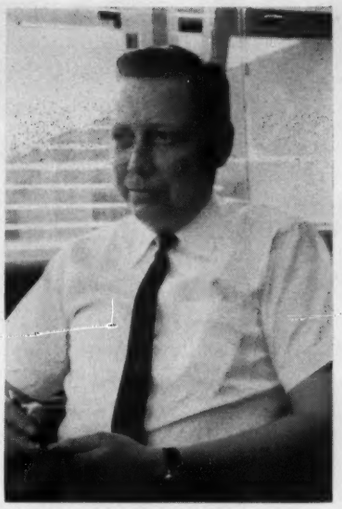
Production MAN of the MONTH

Roger Olmsted Serves Two Plants, Buys Machinery And Raw Material Supplies



Roger Olmsted

SUPERVISING the production of two large fertilizer plants with a third soon to be added to the list, is the big responsibility of Roger Olmsted, manager of the fertilizer division of Northwest Cooperative Mills, St. Paul, Minn. Mr. Olmsted gets a considerable amount of mileage in his log from week to week in overseeing production activities at the company's plants at Green Bay, Wis., and at Winona, Minn. More miles will be added in 1962 when the company's new phosphoric acid plant opens at Pine Bend, Minn., just south of St. Paul.

A bachelor, Mr. Olmsted makes the job his chief hobby. According to W. E. Jones, general manager and the one to whom Mr. Olmsted reports, the latter keeps at his work at all hours with a vigor that makes other employees wonder how he does it. "Roger is no clock watcher," says Mr. Jones. "He also is not afraid to introduce innovations in the plant on an experimental basis. He reads avidly all the technical literature available having to do with fertilizer technology, and attends the fertilizer industry Round Table meeting in Washington each year, as well as conferences of a number of other technical societies of which he is a member."

Mr. Olmsted carries a heavy load of responsibility, in that his duties cover not only personnel activities in the plant, but also purchases of supplies, machinery, equipment of various types, and acting as liaison between the salesmen and manufacturer in the event of problems arising.

A considerable portion of his reading, Mr. Olmsted says, has to do with finding out about new ideas for materials handling, fertilizer production, shipping, bagging and available equipment for making these various operations more economical. The economics of production are a real concern to this production man, since the costs involved in his department have a direct bearing on selling prices of products and, of course, the margin of profit.

Mr. Olmsted has a good technical background for his present work. He is a chemical engineer graduate from the University of Wisconsin, and possesses a thorough grasp of the technicalities of fertilizer manufacture, according to his superior, Bill Jones. "Roger has gone far beyond the 'art' portion of fertilizer manufacture," Mr. Jones observes. "He knows equipment, formulations and phases of mixing thoroughly and scientifically. That is one good reason why he negotiates and writes all contracts for raw materials and equipment from our suppliers."

In order to know intimately not only the properties and specifications of raw materials he buys, as well as the performance and quality of machinery under consideration, Mr. Olmsted travels a great deal to acquaint himself with the companies providing these materials and the persons in these companies with whom he may communicate later as the need arises.

He is said by Mr. Jones to know personally the people at bag firms with whom they do business; the potash company executives; machinery manufacturers, and also superintendents of other plants similar to those which he supervises. He points out that there are practically no "secrets" in his own plant operations . . . that a free exchange of technical information does not constitute giving away profits, but rather helps to boost over-all efficiency throughout the fertilizer industry.

Under Mr. Olmsted's supervision are about 45 employees on a year-around basis at Winona, and 30 at Green Bay. However, during the busy season, the numbers increase to about 200.

Hobbies, beyond his eager studies and reading, include golf, and following the fortunes of his favorite sport club, the Green Bay Packers football team. He is also a baseball fan and, through the winter months, follows professional basketball with considerable interest.

This production man has held his present position for the past four years, following a stint at the Smith-Douglass plant at Streator, Ill. Upon joining Northwest Mills, he spent two years at the Green Bay plant, then moved to the home office to fill the vacancy created when his present boss, Bill Jones, became general manager to head the company's feed, seed, fertilizer, traffic and finance areas.

RIVER TOWN PLANT—Above is one of Northwest Cooperative Mills' fertilizer plants operating under supervision of Roger Olmsted. Building in right foreground is finished products storage area with 14,000-ton capacity, with granular plant in connection at rear. Shipping dock in foreground is parallel to the Chicago & Northwestern tracks. At left are offices, river storage building with 15,000-ton capacity, and back of it, the phosphate plant. The Mississippi River, affording barge delivery of materials, is in the extreme upper left of picture.

Alabama Soil Fertility Group in Annual Meeting

The seventh annual meeting of the Alabama Soil Fertility Society was held at the Whitley Hotel, Montgomery, Ala., Dec. 6-7, in cooperation with Auburn University and the Alabama department of agriculture and industries.

According to the advance program, speakers were to include Charles W. Summerour, agronomist, American Potash Institute, Montgomery; Dr. George P. Donaldson, executive secretary, Georgia Agricultural Commodity Commission for Peanuts, and president emeritus, Abraham Baldwin Agricultural College, Tifton, Ga.; Lavern Brown, superintendent, Lower Coastal Plain Substation, Camden, Ala.; J. Harold Brown, county agent, Moultrie, Ga.; Tom McCabe, county agent, Montgomery, Ala.; J. C. Lowery, extension agronomist, Auburn University, and Dr. Fred Robertson, acting director of the cooperative extension service, Auburn University.

New officers were to be elected at the meeting. The 1961 officers were: Clarence M. Wilson, U.S. Steel Corp., president; T. W. Allen, Spencer Chemical Co., vice president; G. R. Williamson, Agricultural Chemical Service Co., Inc., vice president, and James M. Brown, National Cotton Council of America, secretary-treasurer.

FIRES—HOT ISSUE

Fires in fertilizer and pesticide plants frequently are caused by electricity poorly handled in some way. While electrical current offers the most convenient and safe means of power and light in plants, like many other things, it can be dangerous when improperly handled and controlled.

C. E. Murphy of the Jayhawk Works, Spencer Chemical Co., has compiled a list of common faults responsible for causing fires in electrical systems.

Check your own plant to see if any of the following conditions exist on the premises:

1. Circuits not protected by proper size fuse or circuit breakers.

2. Wiring not properly supported.

3. Insulation badly deteriorated.

4. Wiring not of sufficient size.

5. Wiring installed for temporary use and not replaced.

6. Sufficient number of circuits not provided.

7. Motors dirty, and not provided with proper over-current protection.

8. Switches badly deteriorated, dirty or poorly maintained.

9. Fixtures deteriorated, dirty, poorly maintained or subject to moisture.

Fight TB

Use Christmas Seals

CUT PROCESSING COSTS

Automatic Thayer Scale Controls 3 Ingredients in Cranberry Sauce Processing, Cuts Handling Costs and Increases Profits.

Costly, time consuming measuring, feeding and blending operations in the making of cranberry sauce have been mechanized with 1 Thayer Scale. Now a Thayer Metering Scale continuously feeds cranberries, at precise rates, to the cooking process. In addition, the scale automatically controls the 2 other ingredients required, resulting in better product quality and uniformity at lower handling costs.

Unlike conventional scales, the Thayer Scale has no knife edge pivots to wear and cause inaccurate weighing. The Flexure-Plate suspension system of the Thayer Scale cannot wear, requires no maintenance, and accuracy is guaranteed for millions of weighings.

Thayer engineers will inspect your product and production process and demonstrate how your costs can be reduced by more accurate weight control.

Write for information on BAGGING, BATCHING, METERING and CHECKWEIGHING SCALES.

THE Thayer SCALE

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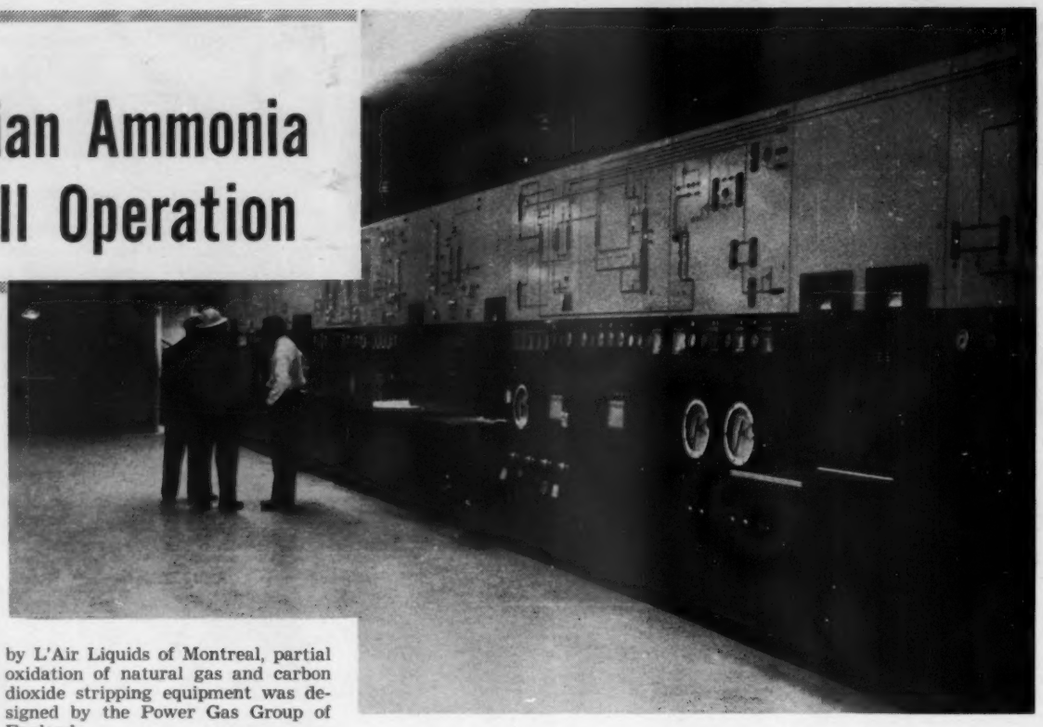
A Subsidiary of Sundstrand Corporation

69,000 Tons a Year . . .

New Canadian Ammonia Plant in Full Operation



A NEW nitrogen producer has recently gone into operation on a 324 acre plant site at Maitland, Ont. The new facility of Brockville Chemicals, Ltd. represents an investment of $18,000,000, its owners say.

The plant has a designed annual capacity of 400,000,000 cubic feet of nitrogen, 1,000,000,000 cubic feet of hydrogen, 1,500,000,000 cubic feet of carbon dioxide, and 69,000 tons of anhydrous ammonia.

Facilities are provided to convert part of the ammonia into derivatives amounting to 60,000 tons of nitric acid, 55,000 tons of prilled ammonium nitrate, or 125,000 tons of nitrogen solutions.

The town of Maitland is situated on the St. Lawrence River in eastern Ontario. The new plant is therefore favorably located transportation-wise, to serve its industrial and agricultural customers in eastern Canada and northeastern United States.

Industrial users will include synthetic fibers, plastics, explosives and pulp and paper manufacturers. These industries will utilize anhydrous ammonia, hydrogen, nitrogen and nitric acid.

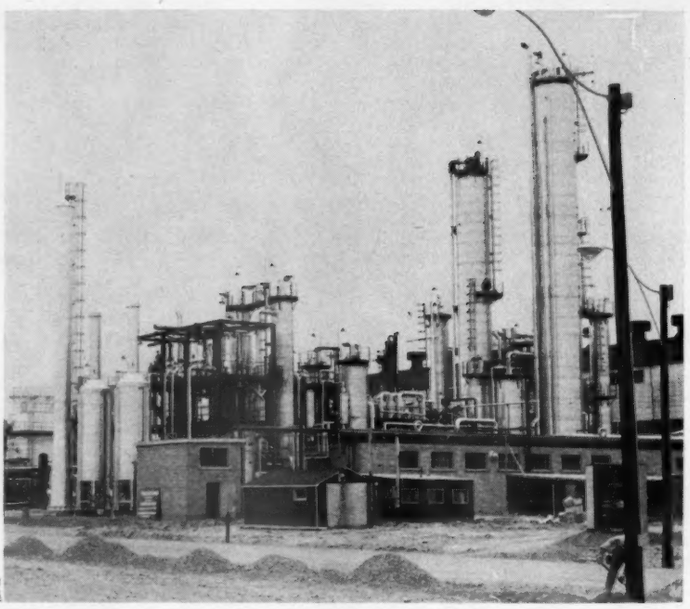
By-product carbon dioxide gas will be converted to liquid carbon dioxide by the Liquid Carbonic Canadian Corp., which is presently constructing a $2,500,000 plant adjacent to Brockvile Chemicals, Ltd.

Agricultural materials will include anhydrous ammonia and nitrogen solutions for fertilizer manufacturers and direct application, and prilled ammonium nitrate. (Marketing of all agricultural chemicals will be handled by H. J. Baker & Bro., Inc.)

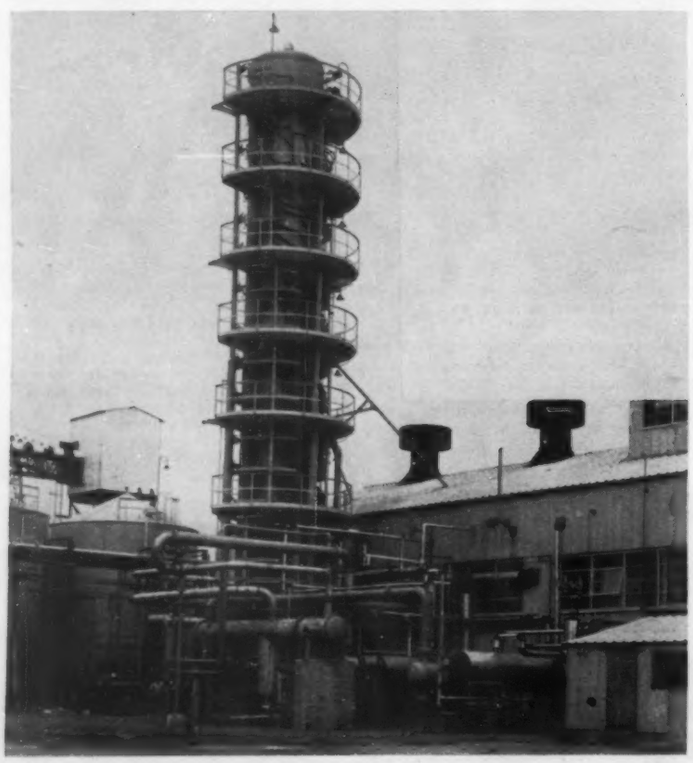
The ammonia synthesis, nitric acid, and fertilizer plants were designed by the Chemico International Corp., New York. Liquid air and hydrogen purification facilities were designed by L'Air Liquids of Montreal, partial oxidation of natural gas and carbon dioxide stripping equipment was designed by the Power Gas Group of England.

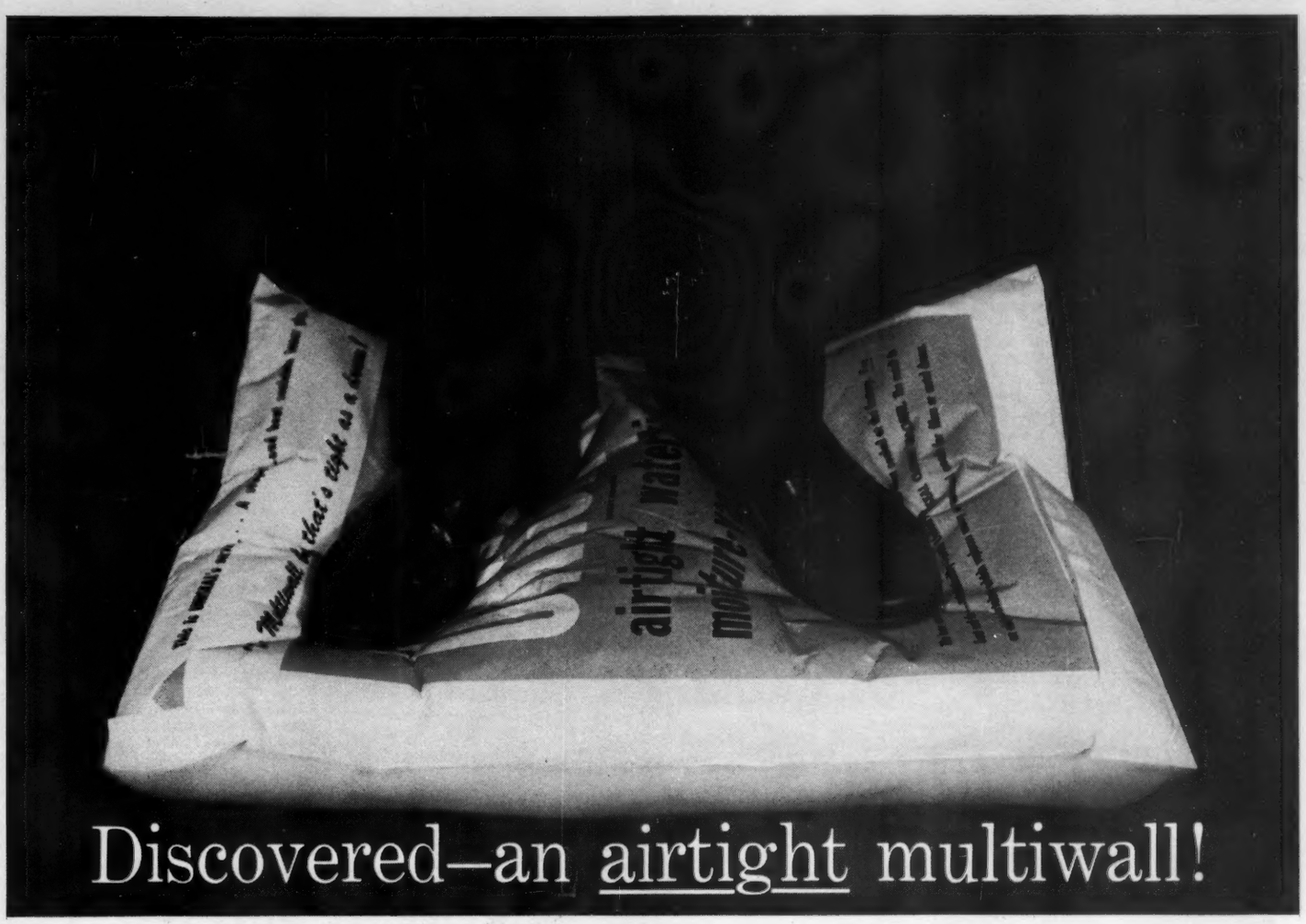
The largest single shareholder in the new venture is Sogemines, Ltd. Formed in 1951, Sogemines is an investment, holding and management company, with headquarters in Montreal.

In 1955 Sogemines began investigating the feasibility of building a synthetic nitrogen plant in eastern Canada. Extensive market studies and consumer surveys of anhydrous ammonia and its derivatives resulted in the incorporation of Brockville Chemicals, Ltd. in August, 1959.



AT CANADIAN PLANT—Above, main control panel in power gas plant at Brockville Chemical's Ontario facility. At right is view of gas cracking units at plant. Below, left, is nitric acid absorption column and at right is prilling tower for ammonium nitrate. Capacity for making 55,000 tons a year of ammonium nitrate is held by the plant.





Discovered—an airtight multiwall!

Simple demonstration helps solve major packaging problem for Dow Chemical

The multiwall bag you see here contains nothing but air. The man standing on it weighs 200 lbs. Yet no air can escape. *That's because the bag is Union-Camp's amazing new UNISEAL.*

It ended a two-year search by Dow Chemical for a package that would provide a perfect vapor barrier.

Protection problem critical

The search began when Dow first developed an effective new crab grass killer. To successfully market this new product, an unusually tight package—even air-tight—was essential. The ideal package also had to be sturdy, printable, easy to handle and ship. And economical.

One day Dow engineers witnessed the UNISEAL demonstration you see above. If the bag could lock in air, then it must have the perfect vapor barrier. Further testing proved they were right.

Seals safely—and saves, too

The remarkable new UNISEAL bag features four plies. An outer sheet of semi-bleached paper (for top printability). Two middle plies of kraft. And an inner ply of kraft laminated to aluminum foil with polyethylene. A final extrusion coating of polyethylene resin over the foil serves as the heat-sealing medium for the inner seam and bottom.

The bag can easily be filled on *any standard filling equipment.* A special machine heat-seals the inner ply and applies adhesive to the tops of the outer plies. It then folds over the lip and pastes it to the outside of the bag. Finally, the machine centers a strip of gum tape over the edge of the lip to form a positive *air-tight* closure.

Apart from providing a perfect vapor barrier, Union-Camp's UNISEAL bag also turned out to be the least expensive container of any previously tried!

How much could a Union-Camp multiwall idea save you?

Hundreds of companies, large and small, have cut costs through Union-Camp multiwall ideas like this. Our comprehensive packaging service—5-Star Plan—covers bag construction, design, specifications control, packaging machinery and a survey of your plant. And it's free.

See your local Union-Camp multiwall man for complete details.

UNISEAL'S unique inner ply is made of kraft paper laminated with polyethylene to aluminium foil. Bags can be easily filled on any standard filling equipment.

Secret of sealing. Special machine heat-seals inner ply, folds lip over and pastes to outside of bag. Finally, gum tape is applied (arrow) forming a positive air-tight closure.

FREE 16-PAGE BOOKLET shows how packers like yourself have achieved greater economy in their multiwall packaging operations. Write Dept. M-4.

UNION-CAMP
MULTIWALL BAGS

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FINES through the Screen

IF EVER the question is to be resolved about the efficacy of fertilizers over long periods of time, the answer is likely to come from the Morrow Plots at the University of Illinois where the longest continuous experiments in the country have been made. Each year since 1876 when the plots were established to find out more about soil fertility, additional answers have been forthcoming.

This past year is no exception. Drs. A. L. Lang and L. B. Miller of the University of Illinois report that while the 1961 yields on the Morrow Plots were not record-breakers, they pinpointed fertilizer's role in modern agriculture.

Under the present cropping system, all the plots are planted to corn every six years, as they have been since 1876.

The untreated portion of a continuous corn plot yielded 46 bu. an acre, while the treated portion produced 104 bu. an acre. Treatment started in 1955 consisted of lime, nitrogen, phosphorus and potash. Before that time the plot received no treatment and had been in corn continuously. On a continuous corn plot receiving manure, limestone and phosphate since 1904 and additional nitrogen, superphosphate and potash for the past seven years, the yield was 117 bu. an acre.

●

A choice of any vacation spot in the U.S. for himself and wife has been awarded to J. Delmas Hinson, 31, Whiteville, N.C., by Smith-Douglass Co., following his being named Sales Supervisor of the Year by the company. Mr. Hinson's winning the award was announced by J. H. Culpepper, vice president and spokesman for the selections committee.

Prize is a seven-day free vacation and first class air flight to and from the spot chosen by the winners. In addition, they also receive a new movie camera, three pieces of matched luggage, $150 spending money, and as an added practical gesture, a baby-sitter to care for the little Hinsons while the parents are on their trip.

Mr. Hinson's responsibilities are in the states of Virginia, North Carolina and South Carolina. He has been with S-D since 1954.

●

A trust fund in memory of the late Dr. Martin W. Carstens was initiated recently by the governing board of the Northwest Agricultural Research Foundation, Inc., to continue the work started by Dr. Carstens who was superintendent of the Northwestern Washington Experiment Station.

Pointing out that Dr. Carstens in his fourteen years at the station established an unequaled record in advancing farming in the Skagit Valley, the research foundation together with a number of individuals and industries, has established the Trust and selected three men as trustees.

The three, Dick South, Clyde Whitinger and I. Nagatani, will direct the Trust's efforts on projects that Dr. Carstens commenced, but which his death left unfinished.

Using money which they hope to gain through donations from individuals, groups and business firms, the trustees will promote the same planning and projects for which Dr. Carstens was noted. The trustees will work without pay, other than out-of-pocket expenses incurred in managing the fund.

Persons, firms or organizations desiring to perpetuate the memory of Martin W. Carstens by furthering his work through the Trust, may send contributions to the Martin W. Carstens Trust, either in care of Attorney Reuben C. Youngquist, Mount Vernon, Wash., or any of the three trustees.

●

A singular honor has been extended to Thomas M. Ware, president of International Minerals & Chemical Corp., who has been named by President Kennedy to serve on the board of trustees of the U.S. Freedom From Hunger Foundation. Heading the Foundation are Harry S. Truman, Mrs. Woodrow Wilson, and Mrs. Eleanor Roosevelt.

Thomas M. Ware

Other members of the board include: Ambassador Adlai Stevenson; Gen. Omar N. Bradley; Gen. Lucius Clay; Eric Johnston, president, Motion Picture Association of America; Walter P. Reuther, president, UAWA; David Sarnoff, chairman of the board, Radio Corporation of America; Gen. James A. Van Fleet, and George Meany, president, AFL-CIO.

The Foundation will participate in the United Nations Food and Agriculture Organization's program to support a broad attack on human hunger and misery around the world, President Kennedy said.

●

Crop dusters operating for the Chinese Communists on the mainland are subject to some unusual temptations to deliver themselves and their aircraft to the Nationalist Chinese government on Formosa. Recently, two members of the Chinese Communist air force defected and flew their small plane to Taipei, Formosa, whereupon the defectors were presented with gold bars worth $22,500 as a reward.

The Nationalist air force has a schedule of payments it makes to Chinese Communist airmen who defect and bring along a plane. The exact amount of the award depends upon the type of plane involved.

Another sidelight on the agricultural situation in Red China: The Communist government is now granting exit permits to citizens who want to leave the country. But guess what the bargain is . . .

Anyone granted permission to leave, must arrange for delivery of 15 tons of fertilizer from abroad. Hong Kong newspapers have reported that so many Chinese had asked their relatives abroad to comply with the demand, that the price has been raised in recent weeks.

●

H. G. M. Jacobson, analyst in the soils department of the Connecticut Agricultural Experiment Station, New Haven, has recently retired after 35 years of service as an authority on soils and their treatment. He was a pioneer in translating soil test findings into pounds per acre of plant food needed for better crops. He has made many recommendations for heavier use of fertilizer products in the state, particularly in vegetable crops.

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Arcadian® News

Volume 6 | Nitrogen Division, Allied Chemical Corporation | Number 12

More and More Farmers are Finding It Pays to Use "ENUF" Fertilizer!

REPORTS INDICATE INCREASING KNOWLEDGE OF VALUE OF FERTILIZER

Reports from many sections of the country reveal a widespread and rapidly growing interest on the part of farmers in the proper use of fertilizers to increase farm efficiency. Farmers are testing their soils, studying official recommendations and conducting their own side-by-side field tests to determine the amounts and analyses of fertilizers that will produce the greatest returns from their crops on their particular soils. They want the best yields they can get from every planted acre.

New Goals in Indiana

Improved fertilizer programs are keeping crop output at record levels in Indiana. Many corn farmers are increasing plant population per acre to obtain better utilization of higher rates of fertilization. As one corn-hog producer says: "More plants using more fertilizer make me more money." Corn populations on many farms range from 17,000 to 22,000 plants per acre... and up. One farmer, who boosted plant population and fertilizer application, says: "Last year, I averaged 70 bushels of corn per acre; this year I am over 125 bushels per acre—and this is supposed to be poor corn land."

Typical applications of starter fertilizers by good farmers in Indiana are 200 pounds or more per acre, with the analysis depending on the needs of the crop and soil. Nitrogen—used as plowdown or side-dressing—runs from 100 to 150 pounds of actual N per acre. For continuous corn, higher rates are being widely adopted to assure high-profit yields.

Dug from a central Kansas field on October 25, the dryland wheat at left shows the effect of starter fertilizer. It is from land continuously cropped. The wheat at right, without starter fertilizer, is from land fallowed last summer.

Farmers are setting goals for their fields, testing their soils, and then "putting in the extra fertilizer needed to get the yields to meet the goals." Side-by-side tests on the farm have proved convincing. "There is always someone looking over our test plots," says one farmer. His dealer says farm test plots help him to sell more fertilizer.

Livestock producers are increasingly aware of protein content and feeding value of grains. A leading Illinois hog raiser points out: "We are fertilizing to get nutritional value as well as yield."

Illinois Prescription Farming

On the fat, flat lands of Illinois, continuous cash corn is getting heavy applications of fertilizer, and is proving that it can produce high cash income plus improved soil tilth and fertility. Where sod is plowed down, two or three years of corn in a rotation is making more

(continued on following page)

(continued from preceding page)

profit where plenty of fertilizer is used. Regular soil tests are typical with good farmers.

Plow-down of mixed fertilizer and nitrogen and side-dressing with nitrogen are common practice. Starter fertilizers are trending to high-phosphate mixtures.

Prescription fertilizing and other programs designed to use the full capacity of native soil productivity and moisture supply are taking hold. Five-acre corn contests are stimulating interest in fertilizer. Also, many farmers are testing increased applications of fertilizer on small acreages to find out whether it pays to use more fertilizer.

The urge to use more fertilizer per acre is being felt by stockmen who want all the corn they can grow and by cash croppers who take better care of their acres that are not idled by the feed-grain program. This year, Illinois again led all other states with an average of 76 bushels of corn per acre.

Test Plots in Iowa

In eastern Iowa, many farmers are conducting their own field tests to compare the effects of different fertilizer treatments. Results, as checked by farmers, dealers and college officials, show big yields and profits from fertilizer programs which include up to 100 pounds of nitrogen, 60 pounds of phosphate and smaller amounts of potash. On good soils in the area, the right mixture of starter fertilizer plus nitrogen side-dressing is the typical program for profit.

One farmer, who runs test plots regularly on his own land, has taken to conducting similar tests on rented land in cooperation with his dealer. This practice convinces the land-owner and other farmers that more fertilizer pays.

Another corn grower, who gets yields as high as 125 bushels per acre, says: "Land, taxes, labor and machinery cost us just about the same, whether we harvest 10 bushels or 100 bushels per acre. We cannot afford not to use fertilizer—the only question is how much will pay the best profit."

Complete Fertilizer Pays

Many soil tests in eastern Kansas and Nebraska continue to indicate no real need for potash. However, corn and wheat growers who conduct fertilizer tests in their own fields are finding that it pays to use complete fertilizer containing potash. With potash, the corn is heavier, less chaffy and less susceptible to stalk rot. Wheat straw stands up better and test weights of grain run four to six pounds heavier.

In Nebraska, grain sorghum has been popular on dry land, but severe damage by western corn rootworm to irrigated corn will bring heavier planting of milo on irrigated land. Starter fertilizer, plus nitrogen side-dressing, is becoming more important in sorghum production... helping to produce 60 to 100 bushels per acre where average yields are 40 to 45 bushels per acre.

Fertilizing Kansas Wheat

For many years, very little fertilizer was used on wheat in Kansas. Now, farmers are beginning to use mixed fertilizer at planting time and nitrogen top-dressing later. In side-by-side field tests this fall, grain made twice as much top and root growth with 100 to 150 pounds of fertilizer per acre as it made without fertilizer. In many farming areas, 100 to 150 pounds of fertilizer per acre seems small. But, where fertilizer is just beginning to take hold, this application of fertilizer represents real progress.

Southeast Keeps Learning

The Southeastern states have been heavy users of fertilizer for many years, but farmers keep learning more about fertilizer and keep using it better to produce more profitable yields. This is particularly true in the case of cotton and tobacco. Soil types, climate, heavy rainfall and continuous cropping—all increase the need for plant food.

In a North Carolina cotton county, where a yield of three-fourths of a bale per acre is common, leading farmers are using enough fertilizer to produce 1¾ bales per acre. One grower of several hundred acres of cotton uses 700 pounds of fertilizer per acre plus nitrogen side-dressing. His best field produced 27½ bales on 18 acres.

Good Farmers Stay Ahead

State average yields in the Southeast continue to rise, with leading farmers staying well ahead of these averages. In South Carolina, the 10-year average yield is 22 bushels of corn per acre. In 1961, this average increased to 34 bushels per acre. Yet, a leading Piedmont area farmer produced 125 bushels per acre by using 600 pounds of fertilizer plus 50 pounds of nitrogen side-dressing per acre.

On Virginia land, which has been farmed since the days of George Washington, the use of fertilizer is on the upswing. One grower, who uses his farm income to build up his farm, has increased his corn yield from 62 bushels per acre to 87 bushels per acre in a below-normal rainfall period. He plows down 200 pounds of fertilizer per acre, uses 300 pounds of fertilizer in the planter, and side-dresses with nitrogen. Much of his corn also gets cattle manure. He says: "We are just going to have to use more fertilizer per acre, because it pays. I want to expand my herd, not my acreage."

Fertilizing Coastal Bermuda

In the Southeast, cash crop farmers and livestock farmers are building profits by improving their use of fertilizers. For example, a South Carolina dairyman uses enough fertilizer to get high production of all the feed he grows—hay, silage, pasture, green chop and grain. As a result, his feed cost per 100 pounds of milk is about $1.90.

He uses 600 pounds of fertilizer per acre on corn, followed by nitrogen side-dressing. He uses 500 pounds of fertilizer per acre on small grains, plus nitrogen side-dressing.

He starts his Kentucky fescue grass with lime and 500 pounds of fertilizer per acre and top-dresses with nitrogen twice a year. His prize crop of Coastal Bermuda grass gets lime and 800 pounds of fertilizer per acre plus three nitrogen top-dressings per year. His 25 acres of Coastal Bermuda carried 75 head of young stock through the season and still had to be clipped for hay. Thanks to fertilizer and good management, he gets 330 days of grazing per year.

The Goal of the Industry

Wherever you go throughout the country, you will find more and more farmers learning more about fertilizer and making better use of fertilizer on their own farms. Often these farmers move far ahead of average fertilizer use and even exceed official recommendations and prove that it pays. They use enough of the right ratios of plant foods to produce extra yields and extra profits. Statistical experts have pointed out that 20% of the farmers produce most of the farm products and use most of the fertilizer. The goal of the fertilizer industry should be to increase the percentage of the efficient farmers who use enough fertilizer and use it properly. This is the road to success for everyone concerned.

NOTE: The information furnished in this issue of the ARCADIAN News is obtained from studies and tests considered reliable; results, however, are not guaranteed.

Arcadian News for Fertilizer Manufacturers from Nitrogen Division, Allied Chemical

YOUR ATTITUDE IS CONTAGIOUS

Last spring, a fertilizer salesman called on two dealers in the same town. Same opportunities! Same problems! Same weather! Same crops! Same soils! But what a difference in sales!

One dealer wasn't moving much fertilizer. He runs an ad in the local newspaper once in a while but thinks it probably doesn't pay. He stands behind his counter and waits for customers to come in. He complains that business is "bad".

The other dealer was selling a carload of fertilizer every day. He had been out selling almost every day all winter and early spring and had lined up a lot of business. He wasn't concerned with reduced acreages due to the feed-grain program; he had sold his customers a program of using enough fertilizer on the acres they farmed. Competition didn't bother him too much, either. He was too busy selling his products.

A positive, forceful, hard-hitting attitude creates an atmosphere in which sales can be made.

You can develop this positive attitude in your dealers by convincing them that your brand of mixed fertilizer is, by far, the greatest producer of new wealth ever made available to them, their customers, and the whole community. Then, you can keep up their enthusiasm by helping them to *really* sell:

1. ***Leave a sales idea on every call.***
2. ***Give praise freely where justified. (Every dealer has good points, look for them.)***
3. ***Provide him with sales materials and show him how to use them to make sales.***

Your ATTITUDE is contagious. Your customer will catch something from you. What will it be—ENTHUSIASM!!! or GLOOM???

We Invite Your Suggestions

We constantly strive to make the ARCADIAN News interesting and helpful to our readers. The topics we choose for discussion in our columns are based on questions asked Technical Service Representatives of Nitrogen Division, Allied Chemical Corporation, by manufacturers of mixed fertilizers and their employees. If you have questions you would like to have answered in the ARCADIAN News, we will greatly appreciate receiving your suggestions. Our chief areas of interest having to do with mixed fertilizers are: formulation, ammoniation, production, equipment, agronomy, etc. We do not promise to carry an article on every suggestion we receive, but, if there is sufficient interest in any subject as indicated by your letters we will attempt to obtain the latest authentic data and information on the subject and use this as a basis for an article in our columns. We look forward to hearing from you. Just write to ARCADIAN News, Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y.

PRECAUTIONS for HANDLING HEAT

When any nitrogen solution has been used in any equipment, it is potentially dangerous to apply artificial heat to that equipment without observing certain precautions. All persons who use heat and all who may become innocent victims of someone else's mistakes should know these precautions so well that they always make sure that they are conscientiously observed.

There have been cases where nitrogen salts have exploded violently in uncleaned equipment when heat was used in repairing, scrapping, or reclaiming scraps...or in attempting to free equipment of blockages. The use of acetylene torches inside equipment can be dangerous. Hydrogen generated by acids can also be a hazard.

To avoid the dangers of applying artifical heat, all deposits and scales of nitrogen salts must be removed from equipment where any heat above that of low-pressure steam is to be used. Removing deposits from large tanks requires much water with force and often shovelling and wire brushing. Inspection is easier after thorough cleaning. All pockets, such as nozzles, sumps, lapped seams and rivets demand special attention to get rid of salt deposits.

When small tanks are to be repaired, they should be cleaned and then positioned so that the repair point is on top. The tank should be filled with water to near the leak before starting repairs.

When hot water or steam is to be applied to free blockages, dangerous pressure may develop unless provision is made for releasing this pressure.

The use of properly-designed, corrosion-resistant equipment will greatly reduce the need for repairs or scrapping. Choice of the correct nitrogen solution, good operating techniques and insulation of pipelines will all help to minimize the salting out which causes deposits of salt in the equipment.

For further information on the proper handling of nitrogen solutions in your plant, contact Technical Service, Nitrogen Division, Allied Chemical Corporation, 40 Rector Street, New York 6, N. Y.

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Arcadian® NITROGEN SOLUTIONS

	CHEMICAL COMPOSITION %							PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Nitrate N of Total N (%)	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60°F	Approx. Vap. Prass. at 104°F per Sq. in. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®										
2	41.0	22.2	65.0	—	12.8	27.7	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	27.8	10.8	1.147	18	15
3	41.0	26.3	55.5	—	18.2	23.6	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	23.9	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	24.0	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	31.5	8.9	1.184	1	56
4M	41.0	19.0	72.5	—	8.5	30.9	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	21.4	13.9	1.050	48	-52
7	45.0	25.3	69.2	—	5.5	26.7	11.2	1.134	22	1
URANA®										
6C	43.0	20.0	68.0	6.0	6.0	27.7	9.3	1.180	12	39
6M	44.0	22.0	66.0	6.0	6.0	26.3	10.0	1.158	17	14
10	44.4	24.5	56.0	10.0	9.5	22.1	11.0	1.114	22	-15
11	41.0	19.0	58.0	11.0	12.0	24.7	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	19.7	11.7	1.087	25	- 7
13	49.0	33.0	45.1	13.0	8.9	16.1	13.5	1.033	51	-17
DURANA® (contains 8% formaldehyde)										
20	37.0	13.3	53.4	15.9	9.4	25.3	7.2	1.235	0	36
U-A-S®										
A	45.4	36.8	—	32.5	30.7	—	16.2	0.932	57	16
B	45.3	30.6	—	43.1	26.3	—	13.5	0.978	48	46
ANHYDROUS AMMONIA	82.2	99.9	—	—	—	—	24.3	0.618	211	-108

Other ARCADIAN® Products:
URAN® and FERAN® Solutions
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UREA 45 • Nitrate of Soda
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AGRONOMIC BRIEFS

from the Experiment Stations

Soil testing is increasing rapidly, Charles Painter, soils specialist of the University of Idaho extension service, has reported. More than twice as many samples were analyzed during the 1961 cropping season as during the previous year. The total was 5,359, compared with 2,126 in 1960.

More than 4,000 samples were tested at the University of Idaho laboratory at Moscow. The others were tested by county agents. More complete services are available at Moscow.

Mr. Painter said there is an upsurge of testing because more farmers are realizing the value of accurate tests. Campaigns have been conducted in several counties in cooperation with the fertilizer industry.

●

Ralph Sorenson, county agent of Spink County, South Dakota, has a good success story he tells to farmers who ask about the probable return from application of fertilizers. His answer is based on a ten-year study which has been conducted locally.

"Of these ten years, eight years showed a profit, one year it broke even, one (1959) a loss, but the plots fertilized in 1959 yielded as much or slightly more in 1960 than plots fertilized in 1960," he says. "This shows that there is very little loss of fertilizer even in a year when the crop is poor."

Mr. Sorenson also has other records that show fertilized crops will carry about three weeks longer into a drouth than unfertilized crops do. "Of course we can also show a few cases where unfertilized plots outyielded fertilized ones. This happens when fertilized crops have been further along and have been hurt by drouth or hot wind. But, over the long pull, eight out of 10 times is a pretty good percentage of success," says the agent.

●

Fertilization can mean the difference between a poor pasture and a good one, according to Dr. Farrel J. Olsen, agronomist at West Virginia University. He says that fall is an excellent time for one to take inventory of a pasture program, and plans should be made to determine the lime and fertilizer requirements. In the fall, he says, it is easy to tell the difference between good pastures and poor ones.

"Productive pastures are the result of good stands of desirable species, enough lime to give a favorable pH, sufficient plant nutrients for vigorous growth, and good grazing management. Use of sufficient lime and fertilizer is essential for high-yielding pasture," the agronomist says.

"When plant nutrients are lacking, the vigor of the stand is reduced and desirable grasses and legumes give way to weeds and undesirable grasses. On the other hand, properly-fertilized pastures, with good management, remain productive for a long time. And if lime is lacking, other fertilizers applied—particularly phosphate—are not as available to plants."

He adds that it is desirable to have pasture plants go into winter in a good state of nutrition. Fall is a fine season to apply lime and fertilizer because of the time involved for these materials to go into solution and get down into the root zone.

Application of 800 lb. 0-20-0 an acre is recommended by Dr. Olsen for permanent bluegrass pastures. This amount should be applied once every four years. Lime also should be applied according to the needs of the soil—as shown by testing.

●

Nematodes are posing a serious threat throughout the state of Oregon, the state university's agricultural experiment station reports.

Grass seed yields have been reduced as much as 75% in some badly-infested fields, the station says. Eastern Oregon sugar beet lands, once regarded as among the few nematode-free sugar beet areas in the U.S., have been invaded in recent years.

Some 3,000 acres of potato land in the Klamath Basin are now fumigated each year to combat nematodes.

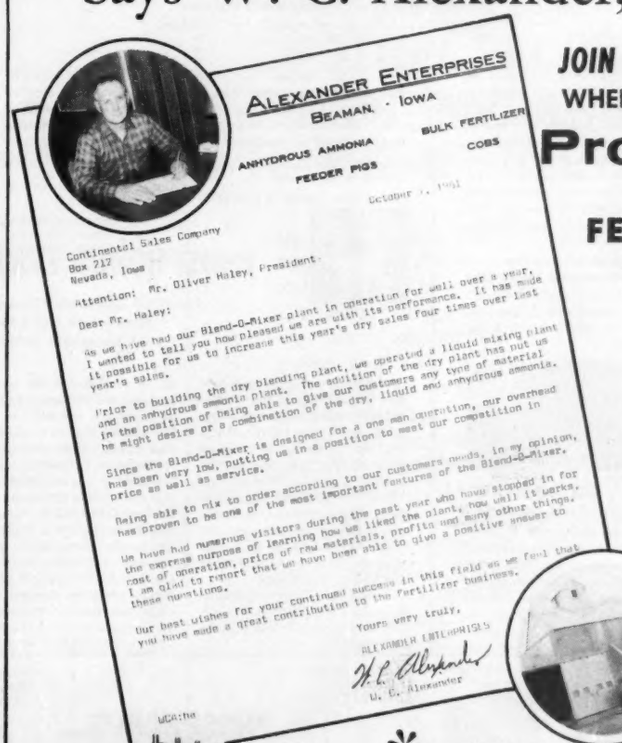
Dr. Harold J. Jensen, OSU nematologist, says at least 19 of the 140 nematode species known to attack plants are now considered major pests of Oregon field and fruit crops, ornamentals, vegetables, forage, and specialty crops.

●

That it is false economy for commercial growers of ornamentals to reduce the dosage of dilute pesticide sprays below recommended coverage rates was indicated in a recent greenhouse study conducted by Niagara Chemical Division of FMC Corp. involving application of its product Thiodan© insecticide on some 30 varieties of chrysanthemums. Tests showed a substantial improvement in aphid control when higher coverage rates were employed, the report says.

A level of .05 lb. of active insecticide per 100 gal. water was used throughout these tests, but the quantity of dilute spray applied per 1,000 sq. ft. of bench space was varied. In one test it was found that 25 gal. spray gave 100% control of aphids six days after treatment, and the area remained free of the pests until flowers were ready for market. This compared with maximum control of 81.7% (recorded 10 days after spraying) at the lower rate. Thus an additional 7.5 gal. spray per 1,000 sq. ft. spelled the difference between unsatisfactory and excellent results.

"Well Pleased After One Year of Operation ... Sales Increased FOUR TIMES" Says W. C. Alexander,* Beaman, Iowa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October 7, 1961
Continental Sales Company
Box 212
Nevada, Iowa
Attention: Mr. Oliver Haley, President
Dear Mr. Haley:
As we have had our Blend-O-Mixer plant in operation for well over a year, I wanted to tell you how pleased we are with its performance. It has made it possible for us to increase this year's dry sales four times over last year's sales.
Prior to building the dry blending plant, we operated a liquid mixing plant and an anhydrous ammonia plant. The addition of the dry plant has put us in the position of being able to give our customers any type of material he might desire or a combination of the dry, liquid and anhydrous ammonia.
Since the Blend-O-Mixer is designed for a one man operation, our overhead has been very low, putting us in a position to meet our competition in price as well as service.
Being able to mix to order according to our customers needs, in my opinion, has proven to be one of the most important features of the Blend-O-Mixer.
We have had numerous visitors during the past year who have stopped in for the express purpose of learning how we liked the plant, how well it works, cost of operation, price of raw materials, profits and many other things. I am glad to report that we have been able to give a positive answer to these questions.
Our best wishes for your continued success in this field as we feel that you have made a great contribution to the fertilizer business.
Yours very truly,
ALEXANDER ENTERPRISES
H. C. Alexander
H. C. Alexander
HCA:he

*One Of 54 Blend-O-Mixer Plant Installations In 11 States — Completed To Date.

JOIN THE NATION'S TREND TO BLEND WHERE YOU LIVE . . . Ask for proof!

Profit $10 A TON!

OWN YOUR OWN FERTILIZER PLANT or Add to your Existing Plant!

BUY We'll install the Blend-O-Mixer in your own building. Takes about one week.

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BUILD If you need a building, we'll build one for you and install Blend-O-Mixer equipment. Liberal extended payments, if you wish.

ONE MAN OPERATED!
AUTOMATIC, PUSH-BUTTON BLEND-O-MIXER FACTORY MIXERS UP TO 7,000 POSSIBLE FORMULAS!

SOLVES PROBLEMS . . . such as — slow Step-By-Step mixing, shrinkage, inaccuracy, labor, high maintenance and inadequate storage losses, inefficiencies and high investment!

PRODUCES 20 TONS PER HOUR! A BIG SAVING IN MAN HOURS!

FREE BROCHURE
Please send me brochure and more information about the Continental Blend-O-Mixer.
My present annual tonnage is _____
NAME _____
ADDRESS _____
CITY _____ ZONE ____ STATE _____

PRICED SURPRISINGLY LOW. WRITE FOR COMPLETE DETAILS AND BROCHURE.

MANUFACTURERS CONTINENTAL LIQUID AND DRY BLEND-O-MIXED PLANTS

CONTINENTAL Sales Co
Box 326 • NEVADA, IOWA • Phone EVergreen 2-2145
OLIVER HALEY, PRESIDENT

ROUND TABLE

Continued from page 12

there are various ways in which this pressure may be introduced into the system was pointed out by Mr. Anderson. The four most common methods, he said, are:

1. The use of an anhydrous ammonia vapor compressor

2. The use of a liquid pump

3. The use of a heat exchanger

4. The use of a high vapor pressure inert gas (nitrogen packing).

Each of these four methods has advantages and disadvantages and each application of the use of these four methods should be evaluated relative to the requirements of a specific operation, he added.

"Presently the most common method of transferring anhydrous ammonia is by the utilization of a vapor compressor. When using a vapor compressor, a source of ammonia from which to 'pull' vapor is a necessity. In the case of transferring from a tank car or tank truck to a basic storage tank, the storage tank itself serves as a source of vapor. When the transferring of ammonia from tank car to process is desired and no basic storage for ammonia is available, a small ammonia supply tank holding from 500 to 1,000 gal. liquid ammonia will suffice.

"The ammonia vapor compressor functions by 'pulling' ammonia vapors from the vapor space in the storage tank—this removal of vapors reduces the temperature of the liquid ammonia in the tank at its liquid-vapor interface and therefore the pressure of the liquid ammonia in the tank is reduced. These ammonia vapors are then compressed — as compression takes place "energy" or BTU's are introduced into the ammonia vapor. These hot vapors are then returned to the vapor space of the tank car.

"The heating effect of the vapors plus the ability of the compressor to produce additional pressure by hydraulic action is responsible for the pressure increase on the tank car. This technique is often referred to as establishing a 'false vapor pressure.' In transferring from a tank car or tank truck to a storage tank, the ammonia vapor compressor has produced a 'pressure differential' by first reducing the pressure of the storage tank and then by increasing the pressure of the tank car or tank truck."

The vapor compressor method has several advantages over the other mentioned systems, Mr. Anderson said. "Perhaps its greatest advantage is its ability to remove residual ammonia vapors from a tank car or a tank truck after all the liquid has been removed. Generally there are from 400 to 700 lb. of ammonia vapors remaining in a 10,000 gal. tank car and a recovery of from 200 to 500 lb. can be accomplished with a vapor compressor before it becomes uneconomical to recover the remaining vapors."

A second advantage of the compressor, the speaker went on, is its relatively low maintenance cost. The major disadvantage of the compressor is that it requires a source of ammonia from which to "pull" vapors. "This, of course, is a major consideration in the initial installation cost."

The second method of introducing a pressure differential into an ammonia system is by the use of a liquid pump, he said. The pump has the ability to raise the pressure of the ammonia "in transit" by hydraulic action as opposed to the "vapor pressure temperature" method employed by the heat exchanger method.

The proper selection of a pump and its piping system to handle liquid ammonia is very essential, Mr. Anderson continued. Pumps used in ammonia service must have a "net positive suction head" to assure that no vapor bubbles will enter into the pump to produce vapor locking. This net positive suction head is easily obtained when the pump is to remove liquid ammonia from the bottom discharge of a basic storage tank. Usually a 1 to 2-foot positive suction head is more than adequate to overcome the "pressure drop" through the suction piping system.

The advantages of the liquid pump, he said, are high transfer rates and high discharge pressures, low initial cost and relatively low operating costs. The major disadvantage of the pump is its inability to remove vapors from the tank car or tank truck at its critical suction piping.

The third method of introducing the pressure differential into an ammonia system is by the use of a heat exchanger which operates on the principle of supplying hot ammonia vapors to the vapor space of the tank car which creates a false vapor pressure at the ammonia liquid-vapor interface. A typical heat exchanger system designed to remove liquid ammonia directly from tank car to process withdraws liquid ammonia from one of the tank car's two liquid standpipes.

This system definitely has the advantage of a lower initial cost, but the major disadvantage of the heat exchanger system is its inability to recover residual ammonia vapors from a tank car.

The fourth method of introducing "pressure differential" into an ammonia system is by the aid of high pressure inert gas. This procedure consists of introducing a high pressure inert gas—usually nitrogen—into the "vapor space" of the tank car. The pressure on the ammonia tank car then becomes a combination of the partial pressure of ammonia and the inert nitrogen gas.

The advantage of this system, of course, is that it does not require an original investment in an ammonia unloading system; however, this method may not offer adequate pressure differential to insure that a complete tank car of ammonia can be unloaded without vaporization of some of the ammonia.

Loading and Unloading With Air Pressure

Walter W. Whitlock, Texaco, Inc., in pursuing the subject of handling liquids, said the best means is through air pressure. However, he said, the critical point is having adequate pres-

NUMBER 3 IN A SERIES OF 3 REPORTS

FILLING THE NEED FOR PHOSPHORUS

American Cyanamid Company completes the phosphorus story with facts about the need for—and the results of—phosphate fertilization

The October and November reports† explained why phosphorus is an indispensable plant food; phosphorus fixation and how to make it work for you; why yearly phosphorus fertilization is needed by most crops.

This final report locates areas of phosphate deficiency and shows how crops respond to phosphate fertilization.

We're using up the phosphate reserves in our soils

Each year an average of about 3 lbs. of phosphorus is removed from U.S. soils for each 2 lbs. returned.

In order to know how much phosphorus your soils need, you must know how much they have. Soil testing is the way to find out.

This deficit is consistently greater in some soils. For example, most pastures receive only a fraction of the phosphorus they need . . . if they get any at all. On the other hand, intensively cultivated crops such as vegetables, tobacco, and potatoes, get more than they can use. This over-ferti… crops over ma… a surprising r… phosphate fert… other crops! A… can explain thi…

How phospha… get the … Early America… ing virgin soils

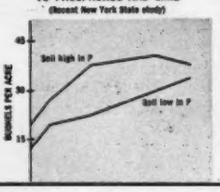
†If you missed these r…

phosphorus, soon learned that phosphate fertilization increased yields. By 1900, phosphates had become the major fertilizer used.

After decades of fertilization and cropping, many—*but not all* trated in the top few inches of soil. This encourages shallow rooting and retarded growth in dry years. Efficient production demands adequate available phosphorus *throughout* the root

never seen a pound of phosphate fertilizer. Forage crops respond as much as cash crops, and often give a greater return per dollar invested in phosphorus, other plant nutrients, and lime.

HOW GRAIN RESPONDS TO PHOSPHORUS AND LIME
(Recent New York State study)



phosphorus is "fix… soils after applica… lizer. But, when a… erly managed, fixe… can be made avail… Thus, like money … phosphorus in the … …but can be releas… increased income … capital investment.

Where do we go …

Production is grow… efficient through co… all phases of agric… crop varieties, ir… management, etc… chain is no stron… weakest link. Effi… ited by the *weakest*

NUMBER 2 IN A SERIES OF 3 REPORTS . . .

PHOSPHORUS FERTILIZATION

American Cyanamid Company presents facts which will help you with phosphate fertilization

Last month's report† explained why phosphorus is the "indispensable" plant food; why only a small part of the phosphorus in your soil is usable by crops as plant food; how phosphorus quickly becomes "tied up" or "fixed" by forming compounds from which phosphorus is unavailable to most plants; and what you can do to make the phosphorus in your soil more available to your crops.

The present report discusses phosphate fertilization — when and how to apply phosphate fertilizers.

ply is used *during the year of application.*) As total phosphorus in the soil increases, so does the amount that is available to your crops . . . *if you manage your soil properly.* Eventually, enough phosphorus can accumulate so that the amount converted from the fixed forms will be enough to supply a good share of the annual crop needs. Where, before, larger amounts of phosphorus fertilizers had to be applied to get enough available phosphorus to crops, now smaller amounts will do, because much of the phosphorus requirement will come

tration of available phosphorus to get crops off to a good start. Later, when root systems are better developed and able to absorb more phosphorus, the crops will be able to get enough phosphorus from these well-supplied soils.

Timing and placement of phosphorus fertilizers

Phosphorus fertilizers are applied to increase *available* phosphorus for the coming crop and to build up the total phosphorus in soils with low phosphorus reserves.

Available phosphorus is quickly fixed in many soils. In

tilizers *in band* … ing the fertiliz… phosphorus is n… as when mixed … Also, crop roots … phorus more qu… of the fertilizer … the young plan… placement is m… acid and other … low in phospho…

On the othe… stay in for tw… must have the … supplied by to… phosphates top… surface of the s… inch or two of t… move into the … fore, for hay a… such as alfalfa … it is important … amounts of pho… *them into the … soil* when the … pared. This extr…

NUMBER 1 IN A SERIES OF 3 ARTICLES . . .

PHOSPHORUS...

American Cyanamid Company explains the problem of getting enough of this indispensable plant food . . . and what to do about it

Every crop needs nitrogen, phosphorus, potassium, and other elements. Each crop needs these elements in a certain proportion. Different soils supply differing amounts of these plant foods. Therefore, the amount to be supplied by fertilizer will vary, depending on soil type, the amount of plant food already in the soil, and other factors. That's why fertilizer manufacturers offer such a wide range of mixed fertilizers. American Cyanamid Company believes the best way to get the most from your fertilizer program is to understand each plant food . . . what it does and how to use it.

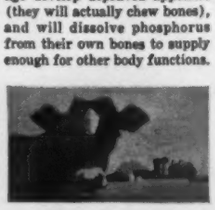
Numbers tell percentages of nitrogen, phosphorus (P_2O_5), potash (K_2O) in mixed fertilizer. The ratio depends on crop need and amount of nutrient in soil. Article discusses problem of phosphorus fertilization.

This is the first of three articles* in which Cyanamid presents

has a different job and a deficiency of each produces its own special symptoms.

When plants don't get enough phosphorus, growth slows; roots are stunted and not properly branched; blossoms, fruits and seeds don't develop properly. Yields are low, and often maturity is delayed.

In livestock, phosphorus is part of many body processes, such as conversion of feed to energy and formation of strong bones and teeth. Animals on phosphate-deficient feed and forage develop depraved appetites (they will actually chew bones), and will dissolve phosphorus from their own bones to supply enough for other body functions.



Purpling of leaf edges reveals serious phosphorus deficiency. Growth and fruiting are slowed, yields cut long before these symptoms show up.

plants can't take up sufficient nitrogen or potash for high yields.

Another way in which phosphorus increases availability of nitrogen is in legumes. Legumes take free nitrogen from the air and convert it to plant food . . . if they are first supplied sufficient phosphorus!

Why phosphorus fertilization is a problem

There's an average of 1000 lbs. of

Plant roots take up most of t… nutrients from the soil solut… *That means most plant food … tering the roots must be dissol… in soil water.* Yet, over 99% o… phosphorus in the soil is insolu… in water. It is part of many c… plex compounds and has bec… "tied up" or unavailable … plants. Soil scientists call … process "phosphate fixati… Less than 1% is phosphorus … is readily available to plants.

How phosphorus is "tied u…

Phosphorus is a very "active" … ment. That's why it's neve… pure form in nature, and wh… so quickly forms many com… compounds with other elem… in the soil. If you handle … fertilizer and soil building … gram properly, you can actu… make available more of the p… phorus "tied up" in the soi… applied in fertilizers. If you … handle soils and fertilizers, … can speed phosphorus fixat… While you can legitimately … sider "tied up" phosphoru… "stored" in the soil, it ca… released only by proper man… ment.

What to do to make more … phosphorus available

Here are some of the things … can do to make available … of the phosphorus you alr… have . . . and that which you … in fertilizers.

Liming — A most important …

sure to do the job. He made five suggestions as guides:

1. Be certain the air compressor is large enough to do the job.

2. Provide for a pressure gauge at the car, storage tank, and at other points in the system. Even though pressure cannot be gauged accurately at a given point in the system while fluid is moving past that point rapidly, nevertheless, if the gauge is there, it can give some indication of conditions.

3. Provide for an adequate air governor valve in the system.

4. Keep handy the solution characteristics chart supplied by the nitrogen supplier.

5. Stay within the limits of permissible working pressures on tank-cars and storage tanks.

The speaker discussed use of air pressure in unloading anhydrous ammonia, stating that it is more simple to transfer ammonia with an ammonia compressor or pump than to provide a large capacity air compressor. He added that the exclusion of air from the anhydrous system reduces rust and corrosion problems to a minimum. "This is especially important inasmuch as ammonia systems are usually constructed of mild steel or iron which is subject to rust when exposed to air and water vapor."

From the safety angle, too, a greater hazard is involved in making the air hookup to an ammonia car or tank with the already high inherent pressures inside. He added a further note of caution that any equipment, tanks or lines, which have contained ammonia should not be welded without first being thoroughly steamed or washed with water and purged with air.

Mr. Whitlock gave the audience ideas on how to cope with nitrogen solution that has salted-out, stating that solutions with a high "fixed-to-free" ratio provide an economical raw material source for making high analysis grades, but the salting-out problem is troublesome. Special precautions are required particularly for cold-weather handling, he said.

As a hypothetical case in point, Mr. Whitlock asked his hearers to assume a hookup has been made to a car, air pressure applied, but no flow is indicated. This is probably due to salt-out action. "The first step," he said, "is to determine if the salt-out is in the unloading lines or involving the car itself. A hose line can be run over the side of the car and liquid valve opened to determine if there is adequate flow of solution. (Some operators prefer to check flow through outlet valve with a 'T' connection bushed down to ⅛ in. pipe nipple or a 3/16 in. hole in plugged pipe fitting.)

"Back-washing with hot water or steam may clear the lines. Sometimes blowing lines with air is sufficient to clear the obstruction. If the line is badly salted, it may be necessary to clear by probing with a hot-water or steam probe until the obstruction is gone.

"If the salt-out obviously involves the car, it may be possible to backwash the stand pipe by pumping in some water through pipe lines to the liquid outlets—the warmer the water the better. In most cases, it may be only the liquid outlet valve or only the stand pipe which is clogged, while the bulk of material in the car is still in solution. In such a case, the pressure can be relieved from the car, outlet valve removed and thoroughly washed with hot water.

"At this stage, the stand pipe can be checked and probed for evidence of any salt or obstruction. If this pipe is salted, it can sometimes be cleared merely by pouring in several gallons of hot water. Sometimes it is necessary, however, to probe the stand pipe with a steam line or along with introduction of hot water in order to clear. After the stand pipe is clear and liquid valve replaced, hook-up of air and liquid lines can be made for proceeding with unloading.

"One should make certain that all safety precautions are observed when making adjustments on a tank car or storage tanks, remembering that the pressure a solution exerts is quite different over a wide range of temperature. If in any doubt whatsoever as to advisable procedure, it would be well to check with the nitrogen supplier for further recommendations."

Material salted-out in storage tank, nurse tank or trucks poses some additional problems, Mr. Whitlock continued. "If it is possible to get any flow at all, the best way to bring material back into solution is with agitation. This can often be accomplished by continually recirculating material by pump. If salt-out condition is extreme, perhaps the only way to bring the material back into solution is with added hot water or steam in addition to recirculating. If dilution becomes necessary, use can be made of dilution charts supplied by nitrogen producers which show the change in physical characteristics of each solution at varying rates of dilution. This information is helpful not only in prevention of salt-out in the first place, but in determining the disposition of the material, whether to process or for direct application, after dilution is made."

Another way suggested by Mr. Whitlock to bring material back into solution or to lower the salt-out temperature, is to introduce added ammonia into the system. "This will not only create some heat, but will change the salt-out point as well," he said. This system, however, introduces greater hazard.

How to control nitrogen loss when unloading solutions was another subject discussed by Mr. Whitlock. He said that tests have been made on the contents of a 22,000 gal. tank filled using air pressure to move the solution with no special precautions to control back pressure, showing the product to be full strength. In another case, where the storage tank had an air leak for about 72 hours, the solution showed a loss of 0.5% total N, due to ammonia loss. "It is quite clear from these data that ammonia loss from solutions from tank-cars or storage tanks is negligible if proper precautions are followed," he concluded.

Still another factor influencing salting-out characteristics of solutions is the type and amount of corrosion inhibitors used. He said that complete line plugging had occurred within a two-day period in cases where non-inhibited solution was used, but no ill effects have been noted in solution containing an inhibitor.

Local and regional fertilizer manufacturers are linked to this program by a listing in the last column of each advertisement. These advertisements will be put into booklet form, and made available for distribution by manufacturers and dealers. If you wish a supply, please write for details.

A FERTILIZER PROMOTION PROGRAM OF MAJOR IMPORTANCE TO THE INDUSTRY

In these three advertisements—appearing in *Farm Journal* and *Progressive Farmer*—American Cyanamid Company sets forth the role of phosphorus, and explains how best to handle soils and fertilizers for adequate phosphorus nutrition.

As a major producer of phosphates for fertilizer, we're mindful of two important facts: *One*—the prosperity of the entire agricultural community, including its suppliers, depends on how well America's land is farmed; *Two*—America's phosphate reserves are *not* inexhaustible. Cyanamid hopes these reports will contribute to both *sufficient* and *efficient* use of phosphates in a well-balanced fertilizer program. The advertisements are summed up this way: "Use enough pounds of fertilizer... and get the most from every pound you use."

We believe that only *methodical effort* to increase general understanding of fertilizers can bring total fertilizer usage up to *recommended* levels.

American Cyanamid Company, Agricultural Division, Princeton, New Jersey.

CYANAMID

PHOSPHATE PRODUCTS

CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

Arizona Agrochemical Corp. Formed Via Merger of Two Fertilizer, Pesticide Firms

A multi-million dollar agricultural chemicals manufacturing company with complete facilities from basic production to distribution was created when stockholders of Arizona Fertilizer and Chemical Co. and Southwest Agrochemical Corp. approved the merger of the two companies into the new Arizona Agrochemical Corp. in Phoenix Nov. 24.

The new company is now the largest agricultural chemicals company in Arizona, with assets of $11,185,000 and an annual sales volume in excess of $11,000,000. In addition to manufacturing plants in Phoenix, Kyrene, Chandler, Toltec, Willcox and Yuma, it maintains extensive distribution, research and field service facilities throughout the state, and operates subsidiaries which supply fertilizers and insecticides to the Imperial and Palo Verde Valleys in California and manufactures industrial chemical specialties in Phoenix.

J. Clyde Wilson, board chairman, announced the merger at the first organizational meeting of Arizona Agrochemical Corp., held in Phoenix. Two new directors were elected to fill out the company's board of directors: Ron Ecke, financial vice president of Farmers Insurance Group, Los Angeles, and C. R. Krimminger, vice president, treasurer and director of Southwestern Research & Development Co. Mr. Krimminger is also a director of Southern Arizona Bank & Trust Co. and the American Institute for Foreign Trade, and was formerly president of Arizona Title Insurance & Trust Co.

Other directors of the new company are Norris L. Enloe, Frank M. Feffer, Sr., Frank M. Feffer, Jr., C. P. Gould, Irving A. Jennings, Don Keyfauver, W. W. "Bill" Pickrell, George P. Sealy, Clarence R. Smith, Floyd M. Smith, and J. Clyde Wilson.

Mr. Wilson is president of the National Cotton Council and adjutant general of the Arizona National Guard. Frank M. Feffer, Sr., is president and general manager of the new company. Other officers are Frank M. Feffer, Jr., secretary-treasurer and assistant general manager; Ted Swift, vice president; Joseph G. Hartsig, assistant vice president; Robert V. Kerley, vice president; Thomas C. Clark, Jr., assistant secretary-treasurer; Duncan A. Sim, director of public relations, and Gene Brown, budget director.

Mr. Feffer points out that Arizona Agrochemical Corp. is the state's only basic commercial agricultural chemicals company, manufacturing anhydrous ammonia, sulphuric acid, complex dry fertilizer materials, and a complete line of agricultural chemicals.

The new company is active not only in the field of fertilizers and insecticides, but also in herbicides, fungicides and soil amendments. A technical staff is headed by Dr. John Chilton, director of research and development. The staff includes chemists, entomologists, plant pathologists, agronomists and weed specialists.

In the company's laboratory, control samples of its products are analyzed, and new products tested and developed. Among the new products developed recently is "Fire-trol," a fire-suppressant which has had remarkably effective results in controlling forest fires.

The company will continue to operate Arical Co., a wholly-owned subsidiary which manufactures and distributes fertilizers and insecticides through its plants in Blythe and Imperial, Cal. Another wholly-owned subsidiary, an industrial chemicals specialties manufacturing and distributing company, will continue to operate as Cortez Chemicals Co. in Phoenix.

Head offices of Arizona Agrochemicals Corp. will be at 734 E. Southern Pacific Drive, which address has been the headquarters of Arizona Fertilizer and Chemical Co. Most of the personnel of the two former companies are being absorbed into the new firm.

Named Head of Crop Science Society of America

Dr. R. P. Murphy, head of the plant breeding department, New York State College of Agriculture, Cornell University, was elected president of the Crop Science Society of America at St. Louis, Mo., Nov. 29. He succeeds Dr. J. R. Cowan, head of the farm crops department, Oregon State University, Corvallis.

The honor came to Dr. Murphy at a banquet at the 53rd annual meeting of the American Society of Agronomy, of which the Crop Science Society is an affiliate.

Attending the meetings were more than 1,800 leading soils and crops scientists from the U.S., Canada and other countries.

Dr. R. L. Davis, professor of agronomy, Purdue University, Lafayette, Ind., was elected vice president of the Crop Science Society.

SAFETY OFFICERS—Gaither T. Newnam, director of industrial relations, insurance and safety for Smith-Douglass Co., Norfolk, Va., at center of above photo, was elected general chairman of the fertilizer section of the National Safety Council at the section's annual meeting in Chicago, Oct. 16-17. At left in photo is John S. Mark, manager, fertilizer manufacturing division of Farm Bureau Cooperative Assn., Inc., Columbus, Ohio, vice chairman; and at right is C. S. Griffith, superintendent of the Cincinnati, Ohio, plant of Virginia-Carolina Chemical Co., secretary. The new chairman succeeds A. I. Raney, safety director, Phillips Chemical Co., Bartlesville, Okla. The meeting, well attended by industry people, emphasized the necessity for adequate instruction in accident prevention and the need to convince top management of the effect of safety work on the profit and loss statement.

Spencer to Build New Herbicide Facility

Spencer Chemical Co., Kansas City, Mo., announced recently that a new plant to produce specialty organic chemicals is under construction at the company's Jayhawk Works near Pittsburg, Kansas. The initial product of the new facility will be "Carbyne," a weed killer developed by Spencer.

J. C. Denton, president, said that the design of the new facility will permit the production of a broad variety of specialty organic chemicals in addition to Carbyne. The expansion is Spencer's first venture into the manufacture of organic chemicals and is a further step in the company's plan for growth and diversification, Mr. Denton said.

Production in the new plant is scheduled to begin in the summer of 1962 with a capacity sufficient to supply Spencer's domestic and export requirements.

The company reports that five years of research testing and field experimental work have gone into the preparation for full-scale commercial production and sales of its new weed killer. The product was applied on more than 350,000 acres last year, Mr. Denton said.

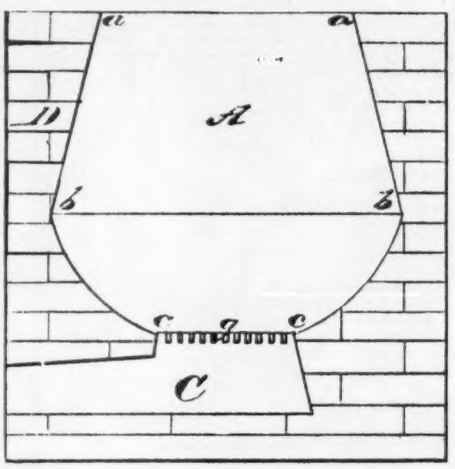
HAS GUNNER—WILL FLY

A Texas aerial applicator has developed a high-flying sideline between jobs of spraying and dusting pesticides on crops. Replacing his spray boom with a louder "boom" from a gun, Alvin Miller of San Angelo, Texas, hunts eagles from his plane. These eagles destroy lambs by the score and are the target for angry ranchers who have made futile attempts from the ground to control the long-taloned birds.

Mr. Miller works for the Sterling County Predatory Animal Hunting Club, a group of ranchmen banded together to fight wildlife such as eagles and coyotes. When a member spots an eagle, the word is flashed to Mr. Miller who, with his gunner, takes off in search of the hunted bird. When the eagle is sighted, the plane is maneuvered into close range while the gunner cuts loose with a 12-gauge shotgun. As many as nine eagles have been felled in a single day, it is reported.

Fertilizer Manufacturing

In Days Gone By . . .



A DO-IT-YOURSELF fertilizer-manufacturing device calculated apparently to make the farmer independent from outside sources of plant foods was patented in 1872 by one Samuel Brown, a resident of Pennsylvania. Granted U.S. patent No. 125,017, the gadget comprised a brick kiln with slanting interior walls, a chimney vent at the top, and an opening at the bottom enabling the farmer to retrieve the product.

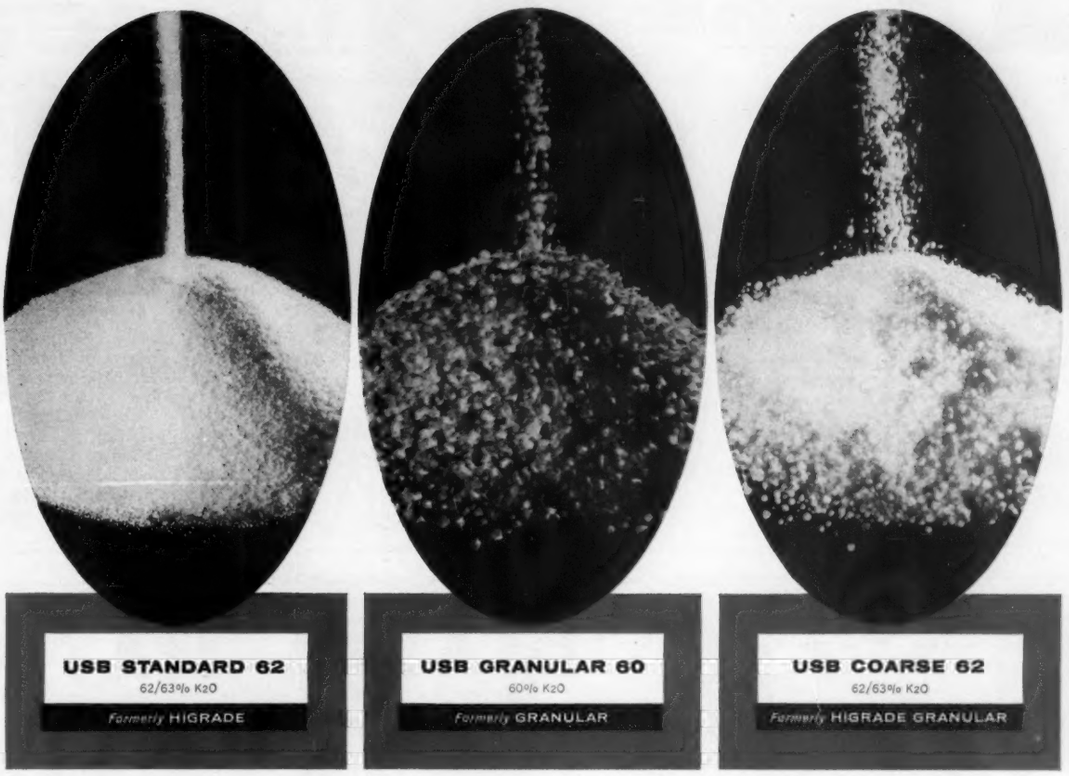
According to the inventor, in his description contained in the patent papers, the object of the invention was "to produce a cheap and good fertilizer for land by burning earth and mixing wood ashes with it at the same time."

The kiln was so constructed that the burned earth would drop from the burning interior (A) into the lower chamber (C) from which it could be extracted. The farmer would take earth "which does not contain too much sand," and build a fire and place a good layer of wood thereon.

"I form a layer of earth, then a layer of wood, and so on I alternate with layers of wood and earth until the kiln is properly charged, say, two-thirds full," the inventor explained in his patent. "Then," he continued, "as the layers burn away and settle down, other layers are introduced so that the operation is kept up day after day. The burnt earth and the ashes resulting from the destruction of the wood mix together and fall through the grate into the chamber from which they are removed and cooled, and the mixture is ready for use."

The inventor did not indicate how the farmer would get his other work done while manufacturing fertilizer "day after day," nor was any claim made as to the plant nutrient content of the product.

3 types of POTASH specially sized for you...



To make the best fertilizers...

Each of our three types of high quality muriate of potash is ideally sized to meet your particular manufacturing requirements. Both of the white grades – STANDARD and COARSE – contain the highest possible K_2O (62/63%) and make feasible the manufacture of the highest analysis mixtures. Our GRANULAR 60 is ideally suited for mixtures requiring muriate of a larger particle size... or for direct application. All three products are refined to assure free-flowing and non-caking properties during handling and storage.

For nearly thirty years our products and services have kept pace with your exacting needs. Call, telex or wire one of our nearby offices for prompt delivery.

ATLANTA
1627 Peachtree St., N.E. / TRinity 6-7515
CHICAGO
3456 Peterson Avenue / INdependence 3-6262
LOS ANGELES
630 Shatto Place / DUnkirk 7-5151

U.S. BORAX

50 ROCKEFELLER PLAZA, NEW YORK 20, N.Y. / JUDSON 2-6262

MEN MOVING AHEAD IN THE TRADE

Ralph Avin

Henry Jeffery, Jr.

Three new sales representatives have been added to the nitrogen sales force of Escambia Chemical Corp., according to **James A. Hunter**, sales manager for nitrogen products. The new representatives are:

Frank T. Salter

Ralph E. Avin, who will represent Escambia in North and South Carolina; **Henry E. Jeffery, Jr.**, in North Alabama and Tennessee, and **Frank T. Salter**, who will represent the company in Mississippi and Louisiana. These additions bring to nine the number of sales people added to Escambia's nitrogen sales office since it began handling nitrogen sales on a direct basis July 1.

●

A. F. Keating has been made manager of the Flemington, N.J., bag plant of Bemis Bro. Bag Co. to succeed **P. J. Ferree** recently named vice president of the firm. Mr. Keating has been with Bemis since 1938.

●

G. T. Catherines

Robert Lanino

The appointments of **G. Thomas Catherines** as advertising manager and **Robert Lanino** as assistant advertising manager have been announced by Witco Chemical Co., Inc. Previously assistant advertising manager for Witco, Mr. Catherines now assumes full responsibility for the corporate functions of advertising and public relations.

Mr. Lanino had formerly been with the sales department of the Textile Chemicals Division of Sonneborn Chemical & Refining Corp., a Witco division.

Witco has also announced the appointment of Stanley M. Freeman to the company's board of directors. Mr. Freeman is president of Greentree Electronics Corp., Los Angeles.

●

Newton Cunningham has been named assistant sales manager of Texas Gulf Sulphur Co., according to an announcement by **A. Nelson Myers**, vice president and manager of sales.

Newton Cunningham

Mr. Cunningham will continue to have his office in Houston. For the past year, he has served as assistant manager of technical sales service and was previously assistant manager of the company's Houston traffic department.

●

Raymond H. Feierabend has been elected a vice president of Freeport Sulphur Co., it has been announced by **Robert C. Hills**, president. Mr. Feierabend will be responsible for the company's sulphur operations in Louisiana which include five mines.

●

Horace L. Tilghman has been elected to the board of directors of Virginia-Carolina Chemical Corp. Mr. Tilghman, president of Tilghman Lumber Co., of Sellers, S.C., and Georgetown Building Materials Corp. of Georgetown, S.C., succeeds **M. Stuart Roesler** of New York who resigned.

●

Arthur C. Nichols has been named general sales manager of Dempster Mill Manufacturing Co., of Beatrice, Neb. He was formerly farm machinery division manager for Minneapolis-Moline, Hopkins, Minn.

●

John M. Harris

R. Henry Wheless

Lowell W. Berry, president and board chairman of the Best Fertilizers Co. of Lathrop, Cal., recently announced his resignation from the office of president. He will continue as chairman of the board. Mr. Berry also announced that **John M. "Red" Harris** of Baltimore, Md., has been elected president of Best Fertilizers, and **R. Henry Wheless**, also of Baltimore, vice president in charge of fertilizer production. Mr. Harris assumed his new duties on Nov. 1, and Mr. Wheless on Dec. 1.

Lowell W. Berry

Since 1956, Mr. Harris has been assistant general manager, Davison Chemical Division of W. R. Grace & Co. in Baltimore. He joined Davison Chemical in 1946.

Mr. Wheless has been staff assis-

All over America, users are enjoying the benefits of the Tyler DIAL-A-MATIC Fertilizer Spreader.

They had to believe what they saw in Tyler performance, and now many of our customers have added their second, third and fourth machines.

Once a farmer has spread his fields with a Tyler DIAL-A-MATIC Spreader he will not even consider any other method.

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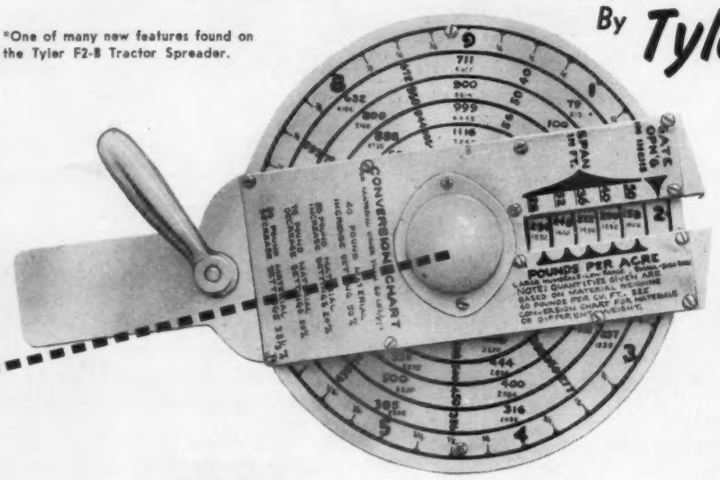
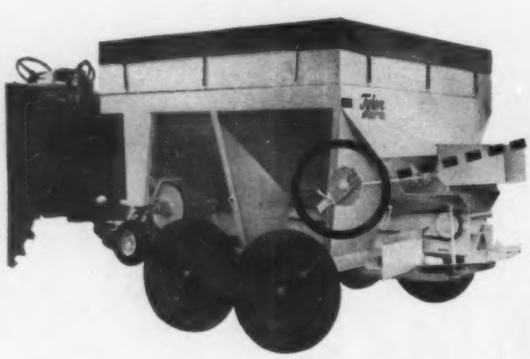
By Tyler

*One of many new features found on the Tyler F2-B Tractor Spreader.





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- Angled metering gate for smooth material flow
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In this jet age of missiles and speed, it's a survival of the fittest . . . super mechanization and careful and precise engineering to produce products that will perform in the best way possible. TYLER introduces the Model F2-B — DIAL-A-MATIC SPREADER—A TOUGH MACHINE BUILT FOR A TOUGH JOB!

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East Highway 12 Benson, Minn.

tant to the general manager, Davison Chemical Division of W. R. Grace & Co. in Baltimore.

●

Clare R. Wolf, Chicago, has been named executive vice president and a director of Tuloma Gas Products Co., **R. A. Carter**, president, has announced. Mr. Wolf formerly served with Tuloma's affiliate, Standard Oil Co. (Indiana), as deputy coordinator of marketing on the staff of the vice president for marketing, supply and distribution.

Clare R. Wolf

As Tuloma's new executive vice president, Mr. Wolf will have over-all responsibility of the company's marketing activities of liquefied petroleum gas, natural gasoline, sulfur and the company's recently acquired line of nitrogen products. He started with Standard Oil in 1939 at Saginaw, Mich.

●

The transfer of **Page Wilson**, senior engineer with U.S. Borax & Chemical Corp. at Carlsbad, N.M., to the company's plant at Boron, Cal., has been announced by **Dr. D. S. Taylor**, vice president, technical department. Mr. Wilson joined the company at Carlsbad in 1932. In his new post he will report to **C. L. Friedmann**, engineering manager.

●

Earl L. Butz, dean of agriculture at Purdue University and U.S. assistant secretary of agriculture from 1954 to 1957, was recently elected to the board of directors of International Minerals & Chemical Corp. Dr. Butz joined the faculty at Purdue in 1937 and was named head of the agricultural economics department in 1946. Eight years later he was appointed assistant secretary of agriculture and served on the board of the Commodity Credit Corp. In 1957 he returned to Purdue as dean of agriculture. On the IMC board, Dr. Butz replaces **Rawleigh Warner** who retired.

Earl L. Butz

●

J. L. Rainey has been appointed manager of the Ris-Van Division of Armour Agricultural Chemical Co., according to an announcement from Atlanta headquarters of the firm. Mr. Rainey joined Ris-Van, at its Belmond, Iowa, headquarters, in December of 1960, as sales manager. Previously he was midwest sales supervisor for the Nitrogen Division of Allied Chemical Corp.

J. L. Rainey

●

Dr. Jack W. Warren has been appointed research field representative by Chemagro Corp., Kansas City, Mo. He has been assigned to the company's Pacific Northwestern and Canadian regions, and will make his headquarters in Yakima, Wash.

Chemagro has also announced the appointments of **Mitchell J. Wrich** and **Dr. George B. Riley** as research field representatives. Mr. Wrich will service the North Central region and Dr. Riley the Central Atlantic states.

Ernest W. Rivers

John R. Stoddard

John R. Stoddard, formerly vice president, sales, for Prentiss Drug & Chemical Co., Inc., and **Ernest W. Rivers**, formerly manager of the industrial chemical products department of Stauffer Chemical Co., have organized Monaco Chemical Industries to specialize in the distribution of agricultural chemicals, industrial insecticides, pharmaceutical compounds and heavy industrial chemicals. Offices are located at 161 E. 42nd St., New York 17. Their telephone number is OXford 7-6939.

R. R. Yeager has been named superintendent of the Smith-Douglass fertilizer manufacturing plant at Columbus, Ohio. He joined Smith-Douglass in 1953 as assistant chemist at Streator, Ill. In 1955, he was transferred to Albert Lea, Minn., where he served first as plant chemist and later as plant chemist and assistant superintendent. His promotion to Columbus plant superintendent became effective Sept. 1, according to **Dale C. Kieffer**, fertilizer production manager for Smith-Douglass.

R. R. Yeager

●

Al Manis has been named manager of the mixed fertilizer department of Consumers Cooperative Assn., Kansas City, Mo. He succeeds **Cleve McCarty**, who became sales manager for National Phosphate Co., Marseilles, Ill. Mr. Manis joined CCA in December, 1958.

●

J. T. Vedder has been made sales manager of Niagara Chemical Division's San Joaquin Valley region, according to **James H. Molich**, general manager of the division. Mr. Vedder had been district manager for Sunland Industries, Fresno, Cal., and continued in that position with Niagara Chemical Division upon purchase of Sunland by FMC Corp. in 1959. Mr. Vedder is past president of the California Weed Conference and is a member of a number of other

J. T. Vedder

HAN® for improved pesticides and herbicides

This uniform Esso solvent is a heavy aromatic naphtha, which gives you the "carrying power" necessary for the formulation of high quality pesticides and herbicides. Compatible with active ingredients, HAN lets you incorporate maximum quantities of toxicants in your concentrate, helping to insure the uniformity of your end product.

AROMIN 85 is also available for use in pesticides and herbicides where higher volatility is required, and the very minimum phytotoxicity with aromatics. Technical assistance from the Esso Sales Service Laboratories is yours for the asking. Call your Esso Representative or write to us at 15 West 51st Street, New York 19, New York.

HUMBLE OIL & REFINING COMPANY Esso

agricultural and entomological organizations in California. He will make his headquarters in Fresno, Cal.

●

Dr. Luther L. Farrar has been named market development representative for pesticides, Olin Mathieson Chemical Corp., it was announced recently by **W. A. King**, director of sales development, chemicals division. Dr. Farrar's duties include pesticide sales development and technical service work as well as direct sales in the southeast. His headquarters will be in Athens, Ga. He was formerly head of the extension plant pathology department of the University of Georgia, and before that, assistant plant pathologist at the Georgia State Experiment Station.

Dr. L. L. Farrar

●

Two Iowa representatives have been named by Smith-Douglass Co. **Richard J. Anderson**, a graduate of Iowa State University, will work in northeastern Iowa; and **Ronald L. Gates**, also an Iowa State University graduate, will work in central Iowa, according to announcements by **M. A. Glass**, manager of the S-D plant at Albert Lea, Minn.

●

Pollard Manufacturing Co., Minneapolis, has announced the addition to its sales staff of **Richard A. Fancher** and **Arden E. Malzahn.**

Mr. Fancher formerly was general manager of Welcome Agricultural Chemical Co. and a plant superintendent for International Minerals and Chemical Corp.

Mr. Malzahn for the past several years represented Tryco Manufacturing Co.

Mr. Fancher will represent Pollard in Iowa and South Dakota, and Mr. Malzahn in Minnesota, North Dakota and Wisconsin.

●

Appointment of **Dr. Oscar Johnson** as marketing director of the Niagara Chemical Division, FMC Corp., has been announced. Formerly assistant to the division manager Dr. Johnson will now be concerned specifically with planning and directing all marketing functions, with responsibility for the overall direction of technical chemical sales, market research, advertising and promotion, purchasing, and sales development program. He will analyze marketing opportunities for both new and established products and will develop plans in this regard. In addition, he will retain responsibility for the division's bi-lateral licensing arrangements with foreign chemical producers.

Dr. Oscar Johnson

●

Mareta N. Stone has joined the public relations department of U.S. Borax & Chemical Corp. as a staff assistant, it was announced by **Nicholas J. Kockler**, director of public relations.

●

G. O. Powell

Raymond F. Kahl

F. R. Royster Guano Co., Norfolk, Va., has announced three personnel changes. **G. O. (Gerry) Powell** has been named assistant general sales manager for the firm at Madison, Wis. He succeeds George G. Miller who died July 19. Mr. Powell supervises sales offices in Madison, Indianapolis, Toledo, and Piqua, Ohio, Lyons, N.Y., and Reading, Pa.

Rodney B. Rohr

Royster has also announced that **Raymond F. Kahl** has been named sales manager at Madison, Wis., to succeed Mr. Powell in that position. Mr. Kahl will direct an office staff, an assistant sales manager and seven salesmen in territories covering Wisconsin, parts of Michigan, Minnesota, Iowa, and Illinois. He joined Royster in 1949.

Rodney B. Rohr has been named assistant sales manager at Madison. He joined the firm in 1958 after having been employed by the Farm Bureau Cooperative for some time.

●

Bill B. Overholser

W. O. Hazelbaker, Jr.

Bill B. Overholser and **W. O. Hazelbaker, Jr.**, have joined W. R. Grace & Co., Nitrogen Products Division as sales representatives, it was announced by **R. Q. Parks**, general manager of the division. They will handle sales of anhydrous ammonia and all forms of Grace urea.

Mr. Overholser will be in the Chicago district office and Mr. Hazelbaker in the district office in Big Spring, Texas.

For the last seven years Mr. Overholser was a field representative for the plant food division of Olin Mathieson Chemical Co. Mr. Hazelbaker was manager of A. R. Thorell Supply, Fertilizer Division, selling Monsanto products, for the last four years.

●

Charles M. Reading has joined U.S. Borax & Chemical Corp. as Los Angeles engineering manager, it has been announced by **Dr. D. S. Taylor**, vice president in charge of the technical department.

HALF THE COST

—OUTPERFORMS OTHER LOADERS!

Load—turn in your tracks—unload—and you're back for more with a Melroe Bobcat. You can outwork conventional loaders two loads to one—move more material than clumsy loaders twice as big and twice as expensive!

Just push the drive levers forward to go ahead, pull them back to stop and go into reverse—move one ahead and the other back to pivot in your tracks. The completely variable speed 4-wheel drive, combined with positive double-action 8 gpm/1600 psi hydraulic load control, provides speed, precision and maneuverability that's hard to believe. The operator sits high and clear with bucket and operating area completely visible.

The Melroe Bobcat represents a break-through in loader design. There's no transmission or differential to wear out—no gears to shift. It's big enough to lift a 1,000-lb. load over an 8-foot wall—yet compact enough to fit in the back of a pickup truck. In confined areas, it will move twice as much as loaders twice as big—yet runs an hour on one gallon of fuel. For complete specifications on the revolutionary new Melroe Bobcat, see your dealer or write to the address below.

NEW

MELROE BOBCAT

TURNS IN ITS TRACKS

DUST-FREE DRIVE UNITS SEALED IN OIL —GUARANTEED

ONLY $2,750

100% DRIVE AND LOAD CONTROL

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"SUL-PO-MAG IN PREMIUM SUPER GRO PRODUCES SUPERIOR SWEET CORN FLAVOR, STEPS UP FERTILIZER PROFITS!"

...reports Bud Webb, Manager, Webb's Super Gro, Flemington, Pa., formulator of complete mixed goods

"Every pound of Webb's Super Gro contains SPM (2 to 4 units). We have enjoyed sales increases with Sul-Po-Mag mixed fertilizers."

And, as the picture above shows, Bud Webb, Jr., not only sells premium goods, he also prefers the products of premium growers. One is sweet corn grown with magnesium-rich SPM.

Several years ago, Webb's Super Gro with Sul-Po-Mag was used to fertilizer 75% of one farmer's sweet corn acreage. A conventional 5-10-10 fertilizer was used on the other 25%.

Customers at the stand reported noticeable differences in the corn. The preferred flavor was traced to the SPM - fertilized field. Now Webb's Super Gro is the only fertilizer for this farmer's sweet corn crops.

Sweet corn, however, isn't the only Webb Super Gro success. Tomato and cantaloupe growers also are big users of flavor-improving SPM fertilizers. Alfalfa and seed corn produce high yields and quality when fertilized with Webb's Super Gro and SPM.

Soil testing showed Webb that a general magnesium deficiency existed in his area—and Sul-Po-Mag corrects it. He now uses soil tests to recommend the proper grade to all his produce customers.

Today Webb enthusiastically points out, "We're 10% ahead of last year with SPM products."

SPM

SUL-PO-MAG®

All farmland needs double sulphate of potash-magnesia. SPM contains 18.5% magnesia, 22% potash in sulphate form, 22% sulphur—and less than 2.5% chlorine.

Plant Superintendent Charles Musselmen checks the condition of a new order of Sul-Po-Mag with B. M. Surgent, IMC District Sales Manager. He says, "Unloading SPM is a snap, it flows nice and easy."

Webb regularly supplies dealers with latest literature and bulletins on Sul-Po-Mag. He feels continuous information is the first step in sales. Here Surgent shows Webb latest SPM material.

How IMC promotes Sul-Po-Mag for you!

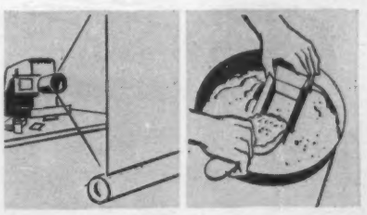
IMC continues to offer you the complete circle of Full Orbit Services. Recheck these services with your IMC representative — **many** of them have been **expanded,** many more are **all new!**

IMC also promotes Sul-Po-Mag **direct** to your dealers in their business publications. And — IMC promotes **direct** to your farm customers — warns of "Magnesium Lag" — through a heavy national, regional and local advertising schedule!

IMC promotes SPM for your dealers

It's the industry's most comprehensive dealer-help program! (1) Handy SPM flash cards give your dealers and their customers the complete SPM sales story **fast** and **factually!** (2) Authoritative SPM Bulletins reach county agents and vo-ag teachers. Loaded with research and university tests, the Bulletins **prove** SPM benefits, help sell for your dealers. (3) Specific SPM ads are beamed at potato, citrus, vegetable, fruit and tobacco farmers. (4) Dozens of local dealer materials and crop folders help your dealers move more Sul-Po-Mag!

IMC promotes SPM to your farm customers



(1) IMC supplies dealers with complete Sul-Po-Mag farmer-dealer meeting kits that outline every step of the way in holding a successful meeting. Available with the farmer-dealer meeting kit is the well-known "Magnesium — Major Plant Food" slide film with script. (2) IMC supplies recommendations on proper use and application rates . . . helps set up soil test service your dealers can offer their customers.

Want more SPM promotion and product facts? Call your IMC representative now!

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Agricultural Chemicals Division, Materials Dept. • Administrative Center • Skokie, Illinois

OSCAR & PAT

When Neighbors Complain . . .

Pat Draws on Round Table Visit For Decision on Plant Dust Control

By AL P. NELSON
Croplife Feature Writer

WHEN PAT McGILLICUDDY walked into the fertilizer company office about nine o'clock the morning after he had returned from the Fertilizer Industry Round Table at Washington, D.C., he saw his partner, balding Oscar Schoenfeld, standing at a desk talking to a dark-haired, middle aged, belligerent housewife with a red scarf on her head.

Oscar looked angry and so did the woman. In fact she was pointing her finger at Oscar. "Why don't you keep your dust from this fertilizer factory in your own back yard? Every week a lot of dust comes over my neighborhood. It blows all over the yard and my family tracks it into the house. I've got my wash in a basket in the basement now and I can't hang it out because the darn wind is blowing your dust my way."

Oscar's lips set in a stern line. "Ach, how can we help it if a little dust gets out? Do we order the windts to blow over your way? We got big empty fieldts over to the East. Why don't it blow that way?"

"Don't get smart," the woman snapped. "It's the responsibility of a factory to cut down on the dust from its products. If you can't do it then move the factory elsewhere."

"Move?" said Oscar angrily. "Ach, this factory was here first. It's been here for 22 years. It's you folks that moved near and now try to crowd us out. Why didn't you buildt someplace else?"

Tall, lanky Pat stepped forward. "Lady," he said, "I'm sorry that the dust from our plant drifts over your way when the wind blows in that direction. I want to assure you that we'll do all we can to correct the situation. Many fertilizer manufacturers have this problem and are working on it."

"That's just talk," the woman said, impatiently. "Don't give me the run around. I'll bet you won't do anything. Well, let me warn you. If you don't do something about that dust problem, I'll get a petition signed. I know I can get a couple hundred signatures. Then we'll go to the city fathers. And him—" she pointed at the critical Oscar—"Where did you get him? He thinks God gave him this town to do with as he likes. He'll learn a thing or two, believe me!"

"I repeat," Pat said calmly, "we'll do what we can. Just give us a little time."

The woman relaxed a little. "Well, I almost believe you mean it. Remember, if you don't do something in a month, I'll be back with lots of friends. They can complain even louder than I can."

The woman buttoned her storm coat closely about her and strode out the door.

"Ach," said Oscar, "who does she think she is? I'll bet she ain't got her taxes paid. I'll bet she owes on her washing machine andt a lot of other things. I bet she ain't got a cent saved. Then she tries to tell us how we shouldt run our plant. I know her kindt."

"If we were in her place perhaps we'd complain, too, Oscar," said Pat. "We've got to try to correct this dust situation. We have been so busy since we bought this plant last year we had to take care of other things first. And I guess we were lucky. The wind blew out toward the empty fields East of here more often than it blew toward the new subdivision."

"Do something?" asked Oscar suspiciously. "What can we do about the dust?"

"We can buy and install dust collection equipment and thus control most of our dust," Pat said. "At the Fertilizer Round Table meeting at Washington, dust control came up for considerable discussion. Many fertilizer manufacturers are taking steps to control dust. I am convinced we ought to investigate dust control and buy recommended equipment."

Oscar snorted. "Ach, I knew it. I knew it. You go to the Round Table and right away learn to spendt more money. You should have stayed home."

"I should not," said Pat firmly. "I learned many things that will help us run our fertilizer plant more efficiently and profitably. When I have time I'll tell you some of the other things I learned. One is dust control and then I come home and find you wrangling with a complaining housewife about it. Oscar, with proper dust control equipment we can reduce our dust problem to a point where complaints will be few and far between."

"Ach, what do I care about complaints?" Oscar said sharply. "We are manufacturers. We employ 26 people. Ach, this town shouldt be gladt we are here. Say—that Mrs. Guerink that complained—she has got a cousin who works in the plant. We will get him to tell her to keep her yap closed, if he wants to keep his chob."

Pat shook his head. "No, we can't do that, Oscar. I know you're angry with this woman, but let's try to correct the problem so we won't hear her complain again or the complaints of her neighbors. And did you know that when our dust blows around town we are wasting fertilizer?"

Comprehension crept into Oscar's blue eyes. His face paled. The truth hit him not only in the mind and stomach, but also in his pocketbook. "Ach, I shouldt have thought of it!" he moaned. "We are blowing lots of fertilizer all over town—and for free. We can't even collect for it, McGillicuddy."

"Of course we can't collect," Pat said, "and people think of us as a nuisance at times. But if we buy the right sort of dust collection equipment we will save a lot of fertilizer material that otherwise blows away. That saved material will help pay the cost of the equipment eventually. One speaker suggested that at the meeting."

"Ach, I see," Oscar said speculatively. "McGillicuddy, you get prices from four or five companies. Squeeze them down in price if you can. Tell them business conditions ain't as good as they should be. Andt ask them if we can still have a 2% cash discount if we take 60 days to pay. Then you can go oudt and put in extra time collecting all those delinquent accounts we got. We can use that money to pay off the equipment. Tell them—"

Freeport to Add Platform To Offshore Sulphur Mine

Freeport Sulphur Co., New York, announced recently that it will add a second production platform at Grand Isle, the world's first offshore sulphur mine. The extension, measuring 1,500 ft., will bring the over-all length of the structure—already the largest steel island in the free world—to 4,076 ft.

The project is located in 50 ft. of water seven miles off the coast of Louisiana. Commercial operation began in June, 1960, and the mining plant has proved capable of weathering offshore conditions including the recent hurricane Carla.

The new platform, erected in accordance with the original development plans, will make it possible to drill an additional 108 wells from the steel island, the company said. Cost of the addition is expected to be about $3,500,000, thereby bringing the total expenditures for the project to approximately $30,000,000. Bids for fabrication of the new arm will be let in late December. Erection is expected to get under way next summer and operation to begin in 1963.

Southern Nitrogen Building New Bulk Storage Terminal

Southern Nitrogen Co., Inc., recently broke ground at Wilson, N.C., for a million-gallon bulk storage and distribution terminal for nitrogen solutions.

The facility, part of Southern Nitrogen's $5 million expansion program, will be built on a 12-acre site in Wilson County with completion expected in January.

The company has an option on an additional eight acres near Wilson and plans to install a network of dispersed field storage facilities in North Carolina and expand its sales staff in the state.

SERVE ALL YOUR FERTILIZER CUSTOMERS BETTER

SPREADING ACCURACY FOR SMALL OR BIG JOBS

2-4 TONS

Model N-28 (2 ton) and the N-48 (4 ton) shown, have unique no-spring, individual wheel suspension—all wheels carry equal weight at all times. These tractor pulled "compacts" make money as rental units.

GET THESE SIMONSEN TROUBLE-FREE FEATURES

- Stainless Steel Apron
- Stainless Steel on all Critical Corrosion Points
- All-Weather Wheel Drive

4-13 TONS

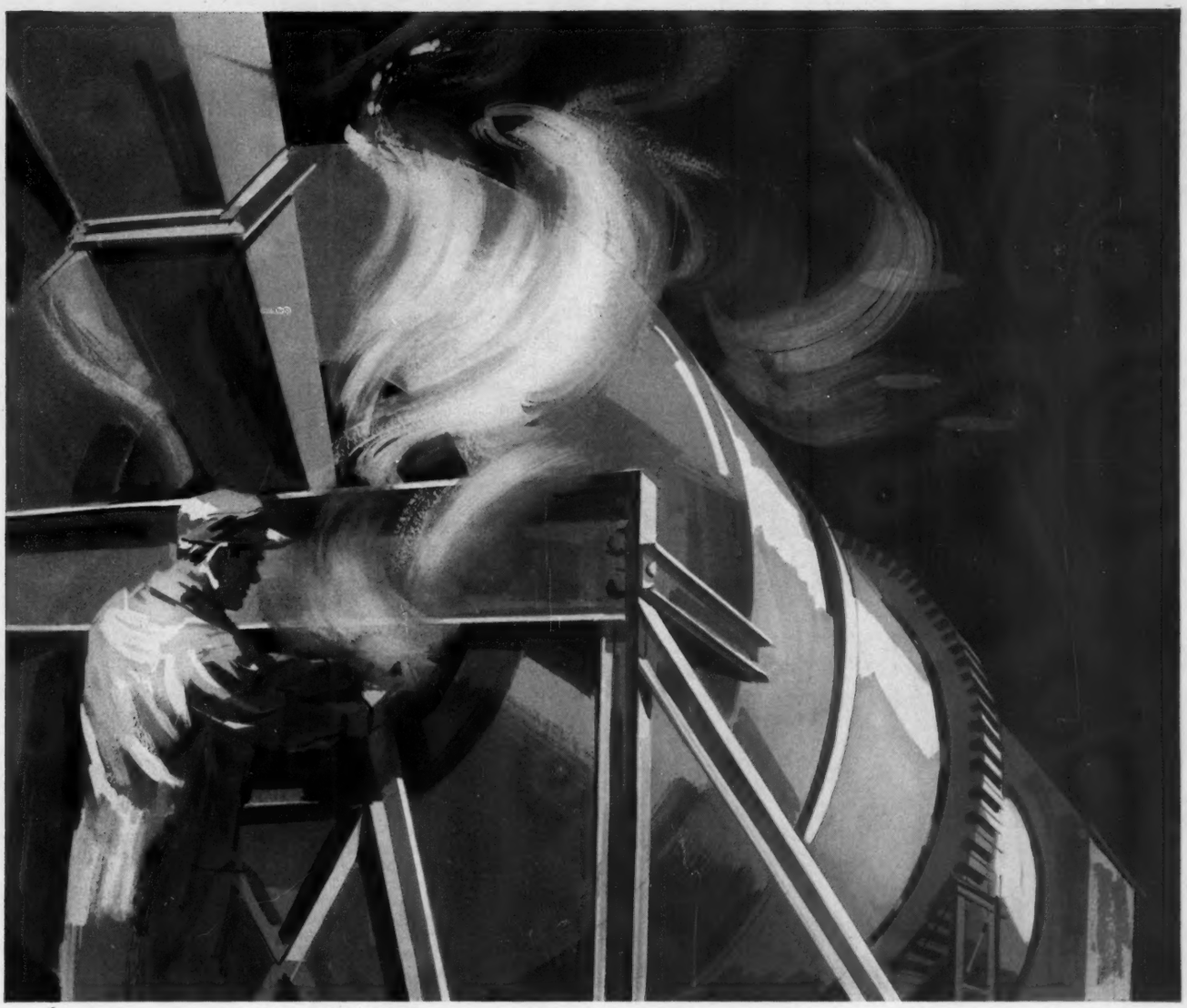
Model P710 shown, has a 7 ton capacity. Other "P" models available from 4 to 13 tons. All "P" models are available in 3 spreading widths, and can accurately spread by test—75 lbs. per acre on up.

WRITE, WIRE OR PHONE COLLECT

for further information about the P710 and the N-48, plus a full line of other bulk fertilizer spreaders and bodies, bulk feed bodies, bulk and sack bodies and unloaders.

SIMONSEN MANUFACTURING CO.
Dept. CL QUIMBY, IOWA Phone 72

Croplife Want Ads . . . Get Results



Texaco can help you stop loss of fertilizer raw materials

Many people in management believe that nitrogen loss in ammoniation, over-analysis, bag breakage, loading and unloading, amounts to only 4 or 5%.

Actually, only the best-run plants have such low losses. More typically, they may approach 15%.

These are findings by Texaco technical experts who help tighten procedures in fertilizer plants as part of the over-all Texaco "Stop Loss" program. For instance, nitrogen losses — including losses of ammonia, N_2 and oxides of nitrogen — are found to be a prime problem in making mixed fertilizer. Our people can advise on proper methods of mixing to avoid losses during ammoniation . . . on plant processes such as crushing, screening, drying, cooling. You can also tap our experts' knowledge of transportation and unloading equipment, storage and handling.

Would you like to have a Texaco man visit you for a look at your possible losses? The service is free. Write to Texaco Inc., *Petrochemical Sales Division,* 135 East 42nd Street, New York 17, N. Y., or 332 South Michigan Avenue, Chicago, Illinois. Dept. CR-42

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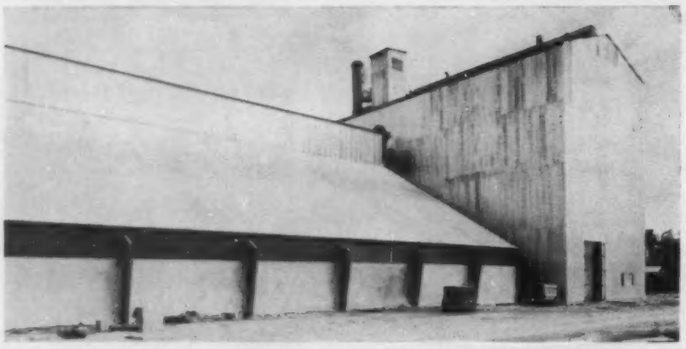
TEXACO
PETROCHEMICALS

AQUA AMMONIA, ANHYDROUS AMMONIA, NITROGEN SOLUTIONS, DIISOBUTYLENE, CUMENE, BENZENE, TOLUENE, ODORLESS MINERAL SPIRITS, NAPHTHENIC ACID, PROPYLENE TETRAMER AND RUST INHIBITORS.



BRAND NEW BUILDING—In a new location, the ammonium phosphate plant above is now on stream and turning out product at the J. R. Simplot Co. site near Pocatello, Idaho. The plant was purchased by Simplot and moved from Montana where it was formerly operated by the Anaconda Co. The building housing the processing machinery is on the right. Its size can be judged by comparing with man on catwalk between two buildings. On the left is storage building to hold finished product.

Simplot's Big Move Complete; New Plant Now in Operation

The moving of a complete ammonium phosphate plant from Anaconda, Mont., to Pocatello, Idaho, has been accomplished, and the re-erected facility is in production and turning out three ammonium phosphate fertilizers, according to W. Grant Kilbourne, vice president and general manager of the minerals and chemical division of J. R. Simplot Co. The plant turns out 16-20-0, 17-48-0, and 16-48-0.

The project was completed on schedule, despite the unusual aspects of having to dismantle the plant and haul its component parts by rail and truck to Idaho. At this point, there was still a task ahead equal to building a new plant. New footings, foundations and buildings had to be built to house the added facilities.

Utilities, such as electric power, water, natural gas and other facilities, had to be brought into the new factory.

A supply of phosphoric acid had to be provided for, and storage facilities built for ammonia, the other raw material. Supervisors and plant operating personnel had to be trained before the new plant could turn a wheel.

But the job is done, and all in the 90 days allocated for it, Mr. Kilbourne stated.

Other improvements have been made at the Simplot Pocatello plant during the same period of time, he said. A new phosphoric acid plant has been built alongside the existing facility which will double present production capacity to over 1,000 tons a day of high analysis fertilizer products.

Production of Triple Superphosphate has also been increased with new screening, pelleting and bagging equipment added. A plant-wide water reclaiming system has been installed and a new maintenance shop built. Additional boiler capacity has been added to generate the extra steam needed by the new plant.

A storage building 100 ft. wide and 600 ft. long for finished product was built for the ammonium phosphate plant.

Mr. Kilbourne revealed that the Simplot phosphate plant is now the largest phosphate fertilizer operation west of Florida.

Super Phosphate Output Up During September

United States production of superphosphate and other phosphatic fertilizer materials during September, 1961, amounted to 213,512 short tons (100% P_2O_5), according to a report just issued by the Bureau of the Census, U.S. Department of Commerce. These production figures were considerably above the 183,651 short tons reported for the same month in 1960, the bureau says. Shipments of superphosphate fertilizer materials during the month totaled 177,507 short tons, or 21% above the volume shipped during September of 1960.

Stocks held by producing plants as of Sept. 30, 1961, totaled 424,615 short tons, or 3% less than those held on Aug. 31 this year.

Appoints Marketing Head

Beal D. Hargrove has been appointed senior agricultural analyst in the marketing research and development department of Tennessee Corp., the firm announced in Atlanta, recently. He will be responsible for technical and business studies in the plant food industry.

Beal D. Hargrove

Mr. Hargrove was formerly with the agricultural chemicals division of Monsanto Chemical Co. in St. Louis, Mo., and Lion Oil Co., El Dorado, Ark. For several years he was agronomist and field supervisor for the Texas Agricultural Experiment Station at McGregor, Texas.

Mr. Hargrove holds a bachelor's degree from Texas A&M College and a master's from North Carolina State College.

Simonsen Completes Expansion Program

An expansion program to increase manufacturing facilities by 25% has been completed by the Simonsen Manufacturing Co., Quimby, Iowa, according to Merle Simonsen, manager. Simonsen's development into a full line manufacturer of bulk feed and fertilizer bodies caused a speed-up of expansion plans, Mr. Simonsen said. "The over-all objective of the company, growth-wise," he added, "is to expand along lines that will help to maintain high volume production more on a round-the-clock basis."

PESTICIDE FIRE

An early morning fire Nov. 23 damaged the interior and contents of the Wisconsin Department of Agriculture's pesticide residue laboratory at Madison.

Walter R. Griem, chief of the department's laboratory division, said the fire was touched off by a chemical explosion. He declined to make an estimate of the loss until an inventory could be completed.

John N. Williams Elected President Of California Assn.

John N. Williams, president of General Fertilizer & Supply Co., Chula Vista, Cal., was elected president of the California Fertilizer Assn. at the group's 38th annual convention at San Francisco, Nov. 12-14. Mr. Williams succeeds James F. Sloan, Salinas, Cal. The convention attracted some 450 persons representing the fertilizer industry in the U.S. and Canada.

Other officers named at the meeting to serve with Mr. Williams were: L. M. Roberts, general manager, ammonia division, Shell Chemical Co., San Francisco, vice president; William M. Clines, general sales manager, American Potash & Chemical Corp., Los Angeles, secretary; C. E. McFaddin, Imperial NH_3 Service Co., El Centro, treasurer, and Sidney H. Bierly, Sacramento, was reelected to serve until November, 1964. Messrs. Roberts and McFaddin were reelected to new three year terms, and William C. Kaesche and Ralph S. Waltz will serve for the first time. Mr. Kaesche is president, Collier Carbon & Chemical Corp., Los Angeles, and Mr. Waltz is vice president and manager of the agricultural division, Wilson & Geo. Meyer & Co., San Francisco.

Others serving on the 12 man board of directors are James Bonaventura, president, AFC, Inc., Bakersfield; L. M. Duckworth, manager, Western Agricultural Department, Niagara Chemical Division, FMC Corp., Fresno; D. W. Galbraith, president, Agriform Chemical Co., Inc., Woodland; Sam Mooschekian, partner, Downey Fertilizer Co., Downey; James F. Sloan, president, J. F. Sloan Co., Salinas, and John Taylor, president, John Taylor Fertilizers, Sacramento.

Featured speakers during the business session were Ralph Everett, director of Empire Sales Training Center, Inc., Miami, Fla., and Dr. Perry R. Stout, chairman, department of soils and plant nutrition, University of California, Davis.

A recognized authority in the field of fertilizer marketing and sales, Mr. Everett said that all successful sales programs are based upon proper planning. "Start right to end right," he emphasized. "When you have a proper plan, with salesmen who know how to use it, it will work, regardless of price." He also said, "Sell ideas, not products. Sell need versus want—help your prospect to get off dead center. Every firm should develop a good selling plan, and then go out and sell it," he concluded.

Dr. Stout stressed the importance of adequate agricultural production, particularly in the present atomic age. He said that the rulers of Russia would be very happy if they had our surplus problem. He suggested dispersion of the more durable food surplus to points near all areas of habitation in the U.S. as stockpiles of food to sustain the people in any area which may be devastated by nuclear attack. Dr. Stout first advocated this use of food surpluses about two years ago.

Stary Gange, Visalia, Cal., was the luncheon speaker. He cited the need for retention of free enterprise, stating that we should strive to reverse the recent trend toward more reliance on the central government.

F. Cecil Baker Dies

F. Cecil Baker, 72, former president of the American Potash & Chemical Co., died on his farm at South Shaftsbury, Vt., Nov. 6. A native of London, England, Mr. Baker received degrees from Oxford University and Harvard, and was a major in the Royal Air Force during World War I.

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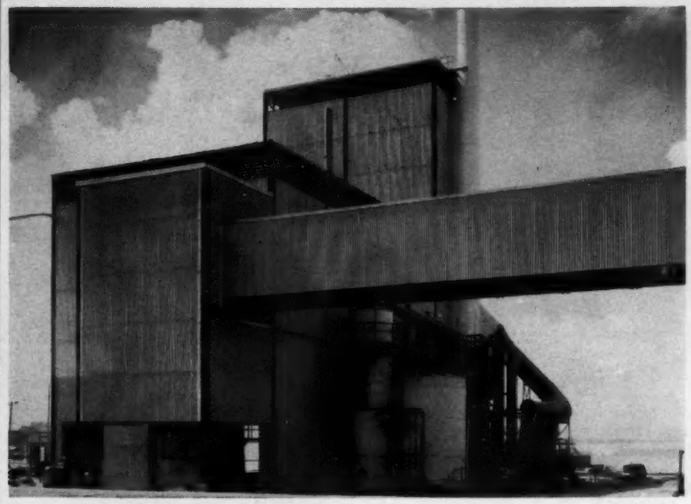


Convention Plans Are Announced by AAI

Agricultural ammonia sales representatives, equipment manufacturers and implement dealers will meet in St. Louis Jan. 10-12 for the 11th annual Agricultural Ammonia Institute convention at the Sheraton-Jefferson Hotel.

One feature of the three-day convention will be a trade show, where ammonia distributors and manufacturers will exhibit their wares. The AAI, with headquarters in Memphis, Tenn., will hear Dr. George C. Smith, University of Missouri authority on agricultural ammonia, and Dr. Herb True of South Bend, Ind., former Notre Dame professor, and now an "idea consultant."

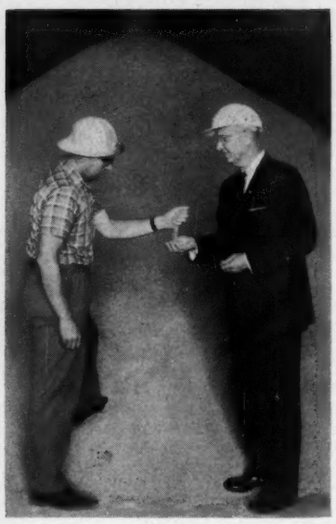
Roswell Garst, Coon Rapids, Iowa, farmer, will be the featured speaker at the final business session on Friday morning, Jan. 12.

David H. Bradford, Jr., Mid-South Chemical Corp., Memphis, is president of the Institute. Jack F. Criswell is executive vice president.

Expands Facilities

Rapids Machinery Co., Marion, Iowa, has announced the recent completion of additional manufacturing and warehouse facilities.

A 40 ft. x 60 ft. steel and concrete addition is attached to the present plant in Marion. The building features a crane for loading and unloading purposes, added ceiling height for the fabrication of special items such as Surge Bins, Weigh Hopper Scales, Special Marion Mixing Units and off-street facilities for loading and unloading within the plant area, the company says.



IMC FACILITIES—Production of diammonium phosphate got under way recently in the new Bonnie, Fla., plant of International Minerals & Chemical Corp., shown above. New facility will produce 120,000 tons 18-46-0 annually. Finished product is taken to storage buildings via housed conveyor in center of picture. Lower photo shows diammonium phosphate coming off production line and being sampled by Floyd B. Bowen (right), general manager of Bonnie operation, and Ivan E. Phillips, project engineer for the diammonium phosphate minerals and chemicals operations of IMC's agricultural chemicals division.

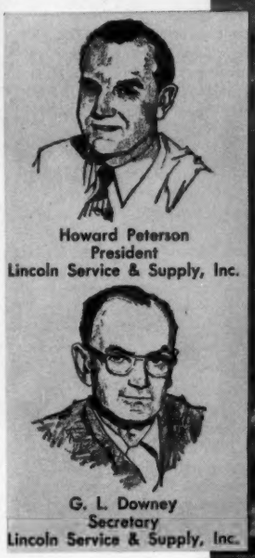
IMC's Diammonium Plant Now Operating in Florida

International Minerals & Chemcal Corp. has added a high-analysis diammonium phosphate to its line of fertilizer materials, the firm has announced.

IMC has now begun producing the 18-46-0 product at its new multi-million dollar plant adjacent to the existing agricultural chemicals plant at Bonnie, Fla. The new facility will have a production capacity of 120,000 tons a year. About 19 persons are employed at the highly-automated plant, which is designed to permit doubling of capacity with minimal interference with operations.

Diammonium phosphate produced at the plant is currently stored at a nearby storage building and shipped by rail. IMC said the material will also be transported by river barge to other company-owned storage sites to facilitate delivery to Midwestern and Southern markets.

The diammonium phosphate from Bonnie will be available for direct application or as an ingredient for mixed fertilizers in these areas.



Howard Peterson
President
Lincoln Service & Supply, Inc.

G. L. Downey
Secretary
Lincoln Service & Supply, Inc.

This modern plant at Grand Island houses the fertilizer manufacturing facilities of Lincoln Service & Supply, Inc., a long-time leader in the Nebraska fertilizer industry. Read how they control corrosion with SPENSOL GREEEN*:

Veteran Nebraska Fertilizer Firm Is SPENSOL GREEEN User For 13 Years

One of the first fertilizer plants in Nebraska was established by Lincoln Service & Supply, Inc. (above) at Grand Island. When this pioneer plant food producer opened its doors in 1948, the very first tank car of ammoniating solution they used was SPENSOL GREEEN. Still a SPENSOL GREEEN user today, this progressive firm continues to be one of Nebraska's leading fertilizer suppliers.

The modern Lincoln Service & Supply plant produces lawn and garden fertilizers in addition to their "Lincoln Pellet-Sized" agricultural brand. Among the first in the industry to make 15-15-0 and 10-20-0, they also led the way in application services by introducing bulk spreading in 1953. To supply the demand for direct application liquid nitrogen, they feature Spencer URA-GREEEN* Nitrogen Solutions. Their complete soil testing laboratory also provides another important service to farm customers.

Responsible for extensive manufacturing and storage facilities, Lincoln Service and Supply officials know the importance of controlling costly corrosion damage. That's why they continue to specify genuine *corrosion-resistant* SPENSOL GREEEN Ammoniating Solutions after 13 years of first-hand experience.

It costs you nothing extra to get the extra protection of SPENSOL GREEEN'S advanced corrosion inhibitor. Why not prolong the life of your valuable plant equipment beginning now? Contact your Spencer representative, and make your next order genuine *corrosion-resistant* SPENSOL GREEEN.

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Zenas Beers Honored By Agronomy Society

Zenas H. Beers, Midwest regional director of the National Plant Food Institute, was elected a Fellow in the American Society of Agronomy during the group's recent 53rd annual meeting at St. Louis, Mo. Mr. Beers directs the educational services of the National Plant Food Institute in a 13-state Midwestern area from Ohio through South Dakota. The ASA citation summarizing Mr. Beers' contributions to agronomic advancement states:

Zenas H. Beers

"Mr. Beers has contributed greatly to the dissemination of information on soils and crops research through magazine articles, farm meetings, radio and TV agricultural programs.

"As Midwest regional director of the National Plant Food Institute, he has helped organize the annual joint meeting of Midwestern Agronomists with Fertilizer Industry representatives.

"These meetings have played an important role in developing a mutual understanding among land-grant colleges and fertilizer industry personnel."

MORE 'HOPPERS IN 1962?

Grasshopper infestations in Manitoba and Saskatchewan in 1962 will be substantially more severe than in 1961. Forecast maps prepared by entomologists with the Canada Department of Agriculture show marked increases in the degree of severity and area infested.

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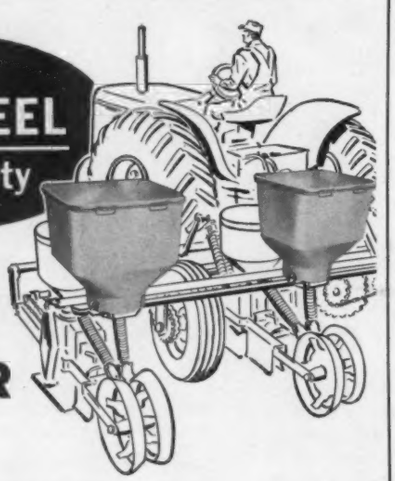

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Standardization Needed . . .

Representatives of Bag Firms Discuss Materials Handling at Conference

A session on materials handling by representatives of multiwall bag manufacturers was presented at the Round Table on Thursday, Nov. 9, with Al Spillman as moderator. Frank Pocta, representing the Paper Shipping Sack Manufacturers Assn., told the Round Table group that some 2,700,000,000 multiwall bags were manufactured in 1960. Of these, chemicals accounted for 38.88%; food, 32.45%; building materials, 18.28%; drugs, 7.97%, and miscellaneous items, 2.42%.

He said the trend in 1960, so far as the fertilizer industry is concerned, appears to be moving toward the 50 lb. bag. During last year, 38.48% of the bags were in the 50 lb. size; 40.83% of mixed fertilizer was in 80 lb. bags, and 20.69% of mixed fertilizer was bagged in 100 lb. sacks.

Mr. Pocta said that 96.66% of the total volume of paper bags used by the fertilizer industry are of 12 different paper widths, while 3.4% are made from as many as 18 different odd widths. He suggested that fertilizer manufacturers using unusual widths of paper bags should consult suppliers to see if some nearer standard products might not be used as well. This would effect worthwhile economies and also assure better service from suppliers.

Mr. Pocta said that a continual search for better bags, improved packaging machines and superior material handling methods is being conducted continually. He reported outstanding progress having been made along these lines in the past several years.

Science or Art?

William L. Shoemaker, International Paper Co., told the Round Table audience that the design of bags is not an exact science, but rather an art. He said that a bag which meets the needs of one company may not necessarily be satisfactory for another firm's requirements. The sales department may decide on a type of bag to be used, since the attractiveness of the package has to do with sales.

Styles used currently, of course, include the sewn open-mouthed bags; sewn valve bag, and the pasted valve bag. The type of bag to be used is frequently determined by the local plant situation and the type of machinery available to handle a certain type of container.

The speaker said that the use of sewn valve bags has gone down since 1955, whereas the total of pasted valve bags had risen from 3½ million in 1955 to more than 65 million in 1960. He indicated that the trend towards smaller bags, that is 25-50 lb. bags, is largely because of the use of pasted valve arrangements.

Mr. Shoemaker went into a little of the history of moisture barrier plies in multiwall bags, saying they were developed around 1932 with asphalt barriers being used at that time. This type of laminated barrier is still most common, he said, and has good properties as a moisture barrier. However, the use of polyethylene materials has been stepped up more recently and adds to the appearance and usefulness of the bags, he said.

Bag Filling Equipment

Robert A. McDonald, Bemis Bro. Bag Co., Minneapolis, Minn., told the group of the unusual importance of bag packing equipment. Although bags have changed considerably in past years, Mr. McDonald said there is really not so much new in filling equipment, but there have been steady advances in the techniques of using the equipment. "Our industry recognizes its responsibility to refine these techniques, as well as to improve the equipment as much as we are able," he said.

Regardless of whether a given company uses valve bags or open-mouth type bags, there are certain fundamentals encountered in packaging chemical products, that are distinctly important to the fertilizer manufacturer. Perhaps the most important requirement of packaging equipment is the accuracy with which it is able to perform. This accuracy, he said, must be made with respect to weight as well as volume. The manufacturers of packaging equipment give particular attention to the principles involved in weighing and also volume control, he said.

He reported that manufacturers of packaging equipment go far beyond the immediate workings of the machine to develop improved processes of bag filling and weighing. "We must concentrate on close coupling of components in the equipment which transfers your product from one stage to another—minimum product in suspension is essential to the success of dynamic weighing.

"We have developed pneumatic control elements for positive application of maximum power to cut the flow of the product; we have adapted wide varieties of electronic controls for these power devices in the interests of instantaneous sensing and immediate reaction. We have learned that such equipment must be made of materials that resist corrosion; such as stainless steel which is now commonplace, and the use of plastics may not be too far in the future," Mr. McDonald said. He added that the machine manufacturers have studied how to build equipment ruggedly for hard use generally and to stand up under extra loads of peak demands. Simplicity, too, is given careful attention to insure maximum speed with a minimum of effort in operation and maintenance.

Labor Saving

Mr. McDonald said that particular attention is being given to labor saving in the development of such devices as bag holders and automatic aids to expedite and mechanize simple functions. Among these are motor actuators and thread clippers to operate sewing machines without the help of hands, to the ultimate design of bag closing conveyors that clean themselves of corrosive build-up and carry bags through the sewing machine even better than human hands and without the constant attention of manpower.

"Even now, and surely just ahead, are automatic bag placers and closers to permit the general use of wall-to-wall bags by putting them on the bag holders by machines instead of hands, and making a perfect sewed closure with no manpower at all," he concluded.

The speaker pointed out that in many places where three men were once commonly employed at bag packing stations, the maximum is now rarely more than two. "One man plus is actually very practical with modern equipment," the speaker said, "and just part time of only one man

BAG REPRESENTATIVES—Speakers at the Nov. 9 session at the Round Table included the above representatives of multiwall paper bag manufacturers who discussed materials handling in bags. From left to right, they are Robert A. McDonald, Bemis Bro. Bag Co.; W. L. Shoemaker, International Paper Co.; Frank Pocta, Paper Shipping Sack Manufacturers' Assn., and J. H. Dively, St. Regis Bag Co.

is now entirely realistic to think about."

J. H. Dively, St. Regis Paper Co., rounded out the discussion on bags and packaging, by telling the group that the most wanted situation in fertilizer plants is reducing costs of bagging, improving the service and doing both under the present setup. The use of hand trucks, he said, is still being employed to a good advantage, due to the flexibility involved with such a setup.

Reversible Conveyors

Since World War II, however, conveyors have been installed in a large percentage of the existing plants. Such conveyors offer 2-point loading, are reversible, and reduce labor considerably. However, there are other things to be considered, including a reduced tonnage capacity and the fact that each grade must be manufactured in sequence in order to use the conveyor efficiently for loading.

Mr. Dively estimated that a closed conveyor system might reduce tonnage by ⅓, by handling perhaps 200-240 tons a day instead of 340-380 tons. He suggested that the fertilizer manufacturer should seek equipment capable of providing high tonnage capacity with a minimum of labor; equipment with low handling cost per ton, and systems with maximum flexibility for fast service.

Ample warehouse and storage facilities simplify the packaging and shipping procedures of the company. He said that such a situation eliminates direct loading from the plant, provides flexibility and separates packaging from shipping, adding that production can be increased by a large percentage by long runs.

Customer service can also be improved through use of warehouse facilities, he said, since certain grades may be loaded at the time they are needed.

There are a number of things to consider in contemplating a well managed warehouse situation. Its location should be of prime importance, he said. It should be accessible to trucks with ample space for trucks to maneuver in the yard, even when there are a number of them present. A good loading area should be provided near railroad facilities and also near the plant.

Layout Important

Layout of the warehouse is another important consideration, he said. Ample capacity is a must, with a rule of thumb figure being around 150 tons of storage space per 10,000 tons of annual production. A rectangular shaped warehouse gives more wall space, he said, and aisles between rows of bags should be at least 12 feet wide. Minimum width of a warehouse should be from 30 to 35 feet. Size of the building, of course, will be determined by the production output of the company in question. He suggested concrete floors for storage and ceilings at a minimum of 15 feet.

Mr. Dively emphasized that good warehouse facilities must be planned, that they do not "just happen." He also reminded his audience that there is a great deal of activity in and around warehouses during the rush season and that the need for maneuverability of vehicles must be taken into consideration in making plans for such a facility.

MORE TO COME ON ROUND TABLE

EDITOR'S NOTE—It would be difficult to carry a full and complete report of the Round Table meeting in a single issue of Croplife, with the depth of detail our readers expect. Therefore, a second installment of the report will appear in the January issue. This decision was made to avoid a "light touch" on vital information which deserves thorough reporting for the benefit of our fertilizer manufacturer readers.

Manufacturing Conference Scheduled for Atlanta

The National Plant Food Institute's Southern Regional Office in Atlanta has announced a conference on fertilizer manufacturing problems to be held at the DeSoto Hotel, Savannah, Ga., on Jan. 11-12, 1962.

The conference will be open to all persons interested in production of mixed fertilizers, according to Dr. Robert L. Beacher, southern regional director of the Institute. Dr. Vincent Sauchelli, fertilizer technology consultant for the Institute, and Quentin Lee, Cotton Producers Assn. in Atlanta, will be in charge of the program which will include discussion sessions on granulation and formulation, materials handling, caking control, corrosion, maintenance, and others. Experienced discussion leaders will handle the topics with ample "question and answer" sessions.

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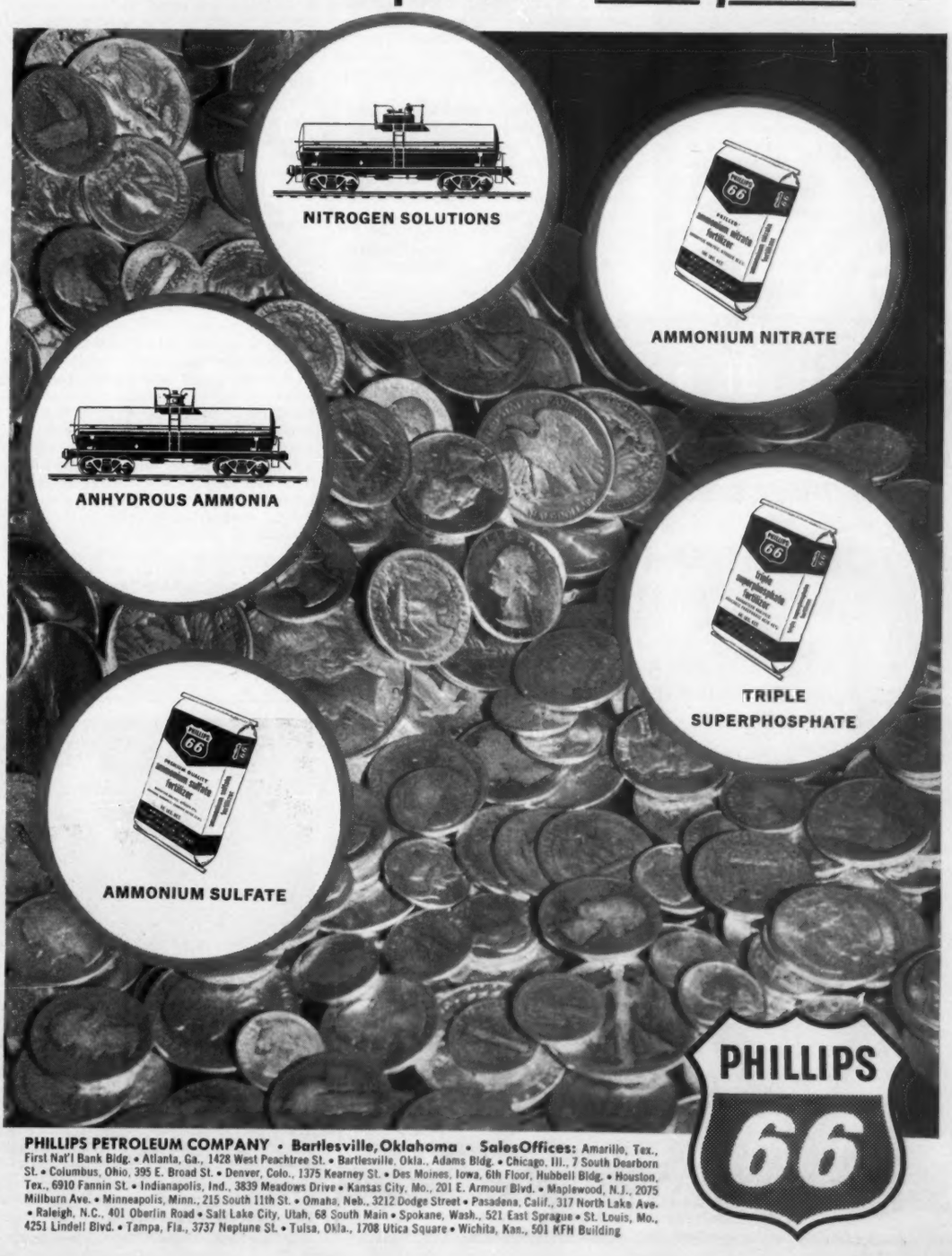

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Job Training Program Is Basic to Sales Attainment

By W. E. Wierenga*
Vice President, California Chemical Co.
Ortho Division
Richmond, Cal.

AMONG THE technological advances available to improve production through increasingly efficient use of land, possibly none has contributed or will contribute more in the future than fertilizer.

Plant food products make intensive farming possible on millions of acres of land which otherwise could not be used so intensively, and without adequate use of fertilizer, the demands for future intensification of farming could not be met.

Tomorrow's farmer will be required to produce even greater yields on fewer acres. He must depend more than he does now on fertilizers and upon the suppliers of plant food products.

The fertilizer industry already has products which perform miracles in raising production and lowering unit cost on the farm. Wise use of fertilizer generally returns three or more dollars on every dollar invested. In many instances, the return runs to $7.00 per dollar spent. Few, if any other farm production tools can boast such a handsome return. So the industry has every reason to be proud of its products, or at least what its products have accomplished. The fertilizer industry, however, can hardly be proud of the weak, timid job it has done in merchandising these products. Probably no other industry has used so little imagination in selling.

Growers are interested in results—not just fertilizer. Yet, the fertilizer industry has consistently based its appeal on price per pound or per ton of plant food. This has led growers to the practice of continually shopping for better deals, and the fertilizer industry has been willing to condone and in some cases, actually encourage it.

The lack of imagination by industry and the willingness to meet any price quotation has, no doubt, often contributed to an erroneous belief, among farmers, that the profits in fertilizer are large. Why doesn't the fertilizer industry employ some sales imagination? Perhaps there are not enough specialists in advertising and marketing. Or they have too little say-so in company policy.

Too many of the members of our industry leave the selling of their products to a third party—such as experiment stations, universities, colleges, and trade associations. The third party many times being primarily interested in saving farmers money—not making money. As a result, they recommend that farmers buy as cheaply as possible, and this further degrades merchandising techniques.

The grower's opportunity to make money, by being certain he purchases the right fertilizer, uses it in the proper amount, applies it correctly, and at the right time is far greater than any possible saving he may derive from "chiselling a few dollars on the price." It should take very little imagination or time to understand that. There is far more romance in making money than in saving it.

There are signs of encouragement—a few companies are starting to sell results—make money for growers—not save money. Some companies are training a sales force to use imagination and sell results—not products or prices. We hope this trend will speed up.

Our company sells a program and a plan around which our entire fertilizer merchandising technique is built. An important part of this plan is the salesman's handbook which acts as a guide to help in his success. It contains basic information as well as examples of proved selling techniques.

All salesmen must know their products, their territories, have full information on contracts and agreements, credit, in keeping with company policy, and be acquainted with their company's advertising and sales promotion. In our case, we make certain that every salesman knows the sales handbook forward and backward.

But the sales education should be in the form of a continual training course. Such training should be designed to fit into the technical background of the sales people, because without the basic sales fundamentals, a technically-trained salesman may have difficulty in directing his knowledge in the right direction when working with dealers and growers.

Hiring the Right Man

It is getting to be a serious problem in selecting and hiring good sales people in our field. The art of a real professional salesman is rapidly becoming a large part of our economy. It is necessary for businessmen to continually sell the profession of salesmanship. Selling today is an interesting, exciting, challenging, and rewarding occupation, even a way of life. It requires as much training and hard work to prepare a man for such a career as it does for almost any other profession.

One of the first things to do before hiring a new man for a territory, is to prepare a job description. Exactly what we expect this man to do after he is hired should be written out in detail. Writing out such a description also gives the company a clue about the type of man needed, and will also help when contacting colleges or other sources for such a man.

Our evaluation of the applicant consists of an interview by what we call a "pattern interview," which lists our questions in logical order and prevents our missing any which might be overlooked during the interview. After each question, we write down the applicant's answer so it may be evaluated at a later date. After the patterned interview, we have two other phases which we go through, namely, a personality inventory and aptitude classification test and a mental alertness test.

We know from previous experience, from tests given to our successful men within our company, the type of personality which we desire. The aptitude test shows the interest of the applicant. The mental alertness test is just what it says. It tells whether or not the man can think fast enough on his feet to be in a direct line of fire in the field as a salesman.

We feel that regardless of all the devices used, somewhere along the line must come an exercise of judgment which has to be made in determining whether to hire the applicant. Our point is that the judgment exercised can be no better than the information on which it was based and, therefore, reliable, factual information must be obtained and the decision made on that basis rather than on feelings, impressions, or emotions.

Now our man has been selected. If he is to sell his potential, our job is to train him thoroughly. In training, the employee must have two things: A thorough understanding of the job to be performed and the intelligence and will to do the job.

You may give a man an "A" for working to the best of his ability but you may have to give him an "F" from the standpoint of results. One of the reasons we introduced the mental alertness test was that we were hiring people with the will to do a job and they were trying hard to do that job, but some didn't have what it takes. Our selection and training have brought us to this rather blunt evaluation. If you hire a clod, you end up with a clod. This

*From talk, "Selling the Potential," presented before Southwest Fertilizer Conference and Grade Hearing, Galveston, Texas.

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Holiday
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Supervisors and
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COLORADO GROUP—Representatives of the Colorado Agricultural Chemicals Assn. gathered recently in Denver to discuss a scholarship presented by the association this year to Larry J. Christensen, a senior at Colorado State University, Ft. Collins, Colo. Shown are (left to right): B. J. Fitzgerald, technical representative, Shell Chemical Co. and president of CACA; Gale Harold, area sales manager, Stauffer Chemical Co. and vice president of CACA; Dan Sjoquist, territory manager, agricultural chemical division of FMC Corp. and secretary-treasurer of CACA; Howard Lair, Selco Supply Co., and James Brancucci, Royal Chemical Co.

may sound like a severe evaluation but we are convinced that it is grossly unfair to an applicant and a company to hire a man for a job for which he does not possess the capability.

Training of a new salesman consists of the following four basic steps:

1. **Prepare the learner**
2. **Present the material**
3. **Practice by learning**
4. **Follow up and check results**

Without a doubt, the first two are the easiest and the last two the most difficult. From my experience, the thing I would stress is practice, practice and more practice until it becomes a habit. On a follow-up, we use a supervisor check list. This check list is so designed that the supervisor can automatically check the salesman as he is working with him.

Our experience indicates that training involves a combination of your present company training supervisor and an outside staff or specialist, but I am convinced that no training progress will get off the ground unless it has the full support and follow-up of management.

I might add here that our sales meetings and sales clinics are always conducted with visual aids and prepared material, and have numerous sales presentation contests.

I would like to discuss briefly the appraisal form which we use to appraise our salesmen. On the appraisal form, we cover such matters as the estimated sales for the coming year. We indicate the potential that's available in the area. We establish goals with regard to number of calls per day, number of new accounts, performance we expect with regard to credit and some idea of the profitability of this effort at the salesman's level. At the end of the selling lesson, the supervisor again sits down with the employee and performance is measured against the goals set. As a matter of fact, it makes it very easy for the employee to gauge his own performance and the supervisor can spend time discussing how he may develop into a more efficient salesman.

Salesmen are required to keep customer records which aid the supervisor in determining how effectively he routes himself, the size of the accounts he calls on as well as those he is selling and those he is not. All people like to know how they are doing in their particular job. This is especially true with salesmen because they are more or less on their own most of the time.

Now that we have discussed the potential of the area, selecting the type of sales personnel and the training necessary to obtain our potential, we must now go one step further. In other words, telling the people about our products through advertising.

In most companies, advertising dollars are limited and should be used to the greatest extent possible to sell a specific product as well as the company image. The advertising program must dove-tail with the marketing program. It should compliment, it should emphasize, and it should duplicate the total sales efforts. Advertising that isn't carefully planned is a complete waste of money, time and effort.

Since the agricultural chemical business is prey to weather and other uncontrollable market factors, it is important that your advertising and sales promotion program be so built that they are flexible and can be adjusted to meet changing weather conditions. I refer here to changing the timing of the advertising program rather than the contents of those programs.

Finally, it is very important that the entire sales force be fully informed and sold on the advertising program. It should be thoroughly explained to every salesman so that he can use it in his sales presentation to the buyer. Here again, let me emphasize that effective advertising is carefully planned over a long period of time and not hastely put together at the last moment.

Selling the potential in any area is the desire of all companies, but to do this, it will take hard work. What I have discussed with you today is the key to that goal. People buy products, not for the product itself but for what it will do for them. The purchase of that product satisfies a need in their lives, such as a beautiful home, clothing, cars, a college education for the children. A salesman who can find this hidden need will be successful and remember, don't sell fertilizer, sell customer satisfaction.

Mississippi Conference Scheduled for January

The eighth annual Mississippi Insect Control Conference will be held at Mississippi State University Jan. 4-5, according to A. G. Bennett, entomologist of the agricultural extension service.

Speakers for the two-day meeting include: Dr. W. L. Popham, deputy administrator of ARS, Washington, D.C., "Insecticides — Their Future"; Dr. John Reagan, director of plant quarantine division, ARS, Washington, D.C., "Quarantine Problems," and C. C. Fancher of Gulfport, "New Insecticides for Imported Fire Ant Control."

Other speakers are W. O. Miller of Greenville, Miss.; Dr. J. S. Roussel, Louisiana State University, Baton Rouge; Dr. John Osman, head of the Purdue University entomology department, Lafayette, Ind.; Dr. R. H. Roberts of Stoneville, Miss., and Chesley Hines, W. W. Neel and Clint Graves, State College, Miss.

Also included on the program will be the announcement of the 1962 cotton insect control recommendations of the agricultural extension service, and the annual business meeting of the Mississippi Entomological Assn.

NEW ANHYDROUS STORAGE

The Farmers Cooperative Oil Co., Holland, Iowa, has announced it will install an anhydrous ammonia fertilizer distribution plant at an estimated cost of $18,000. Footings are to be poured soon for a 12,000 gal. holding tank adjacent to the company's bulk plant, and applicators and nurse tanks for use by customers on their farms, will be added next spring.

Potash Deliveries Up About 1% in Nine Month Period of 1961, API Report Shows

An increase of about 1% in deliveries of potash in the U.S., Canada, Cuba and Puerto Rico has been reported for the first nine months of 1961 by the American Potash Institute, Washington, D.C. Deliveries by the eight principal American producers plus the importers totaled 2,936,666 tons of salts containing an equivalent of 1,712,364 tons K_2O. These figures were less than 1% above the figures for the equivalent period of 1960, API said.

Continental U. S. took 1,599,073 tons K_2O; Canada, 76,988 tons; Cuba, none; Puerto Rico, 21,893 tons, and Hawaii, 14,410 tons K_2O. These figures include imports of 210,900 tons K_2O for the first nine months of the year. Exports to other countries were 271,553 tons K_2O. Deliveries of potash for non-agricultural purposes amounted to 113,814 tons K_2O, a decrease of 2% under last year. Total deliveries for all purposes were 3,576,650 tons of salts containing an equivalent of 2,097,731 tons K_2O, a decrease of 1% in salts and K_2O.

During the third quarter of 1961, deliveries including imports for agricultural purposes were 455,350 tons K_2O in Continental U.S., 32,910 tons in Canada, none in Cuba, 7,092 tons in Puerto Rico, and 5,703 tons in Hawaii, making a total of 501,055 tons K_2O. Excluding imports, this was an increase of 95% over last year. Imports for the third quarter amounted to 57,300 tons K_2O. Exports of potash to other countries during the third quarter were 91,145 tons K_2O, a decrease of 24% under last year.

Deliveries of potash for non-agricultural purposes were 39,485 tons K_2O, an increase of over 16% over last year. Total deliveries in the third quarter were 1,069,836 tons of salts containing an equivalent of 631,685 tons K_2O. Excluding imports, this was an increase of about 50% in salts and K_2O over the third quarter in 1960.

Phillips Builds New Bagging, Storage Facilities

Phillips Chemical Co. has started construction of a new 10,000-ton bulk ammonium nitrate storage facility and is revising the bagging and shipping equipment at its Cactus Ammonium Nitrate Plant near Etter in the Texas Panhandle.

Completion of the new facilities and revisions at the ammonium nitrate plant were expected by the company to enable the offering of improved delivery service on both bulk and bagged ammonium nitrate fertilizer.

The new storage is scheduled for completion in February, 1962. Revision of the bagging and shipping facilities, to be completed in June, 1962, will permit a changeover from valve-pack bags to open-mouth sewn bags.

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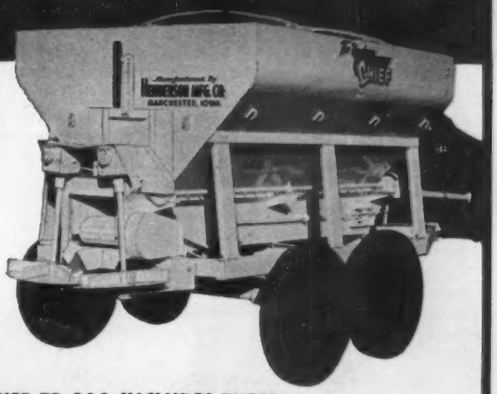

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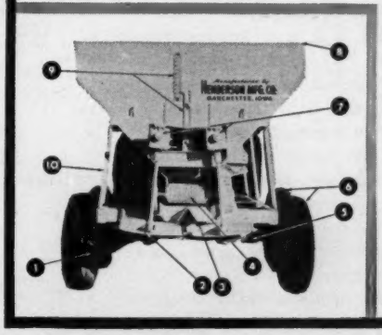

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A BUSINESS PAPER FOR THE FARM CHEMICAL INDUSTRY

What's Kefauver Driving At? . . .

Short-Term Patent Idea Proposed for Drug Industry Likely to Spread to Insecticides

IT IS DIFFICULT for the agricultural chemical trade to make any sense at all out of current proposals sponsored by Sen. Estes Kefauver to limit the life of patents in the drug field to a three-year period instead of 17 years as granted under present laws. The thinking going on under that raccoon skin cap of Sen. Kefauver's appears to be about as fuzzy as the fur on top.

After talking with various people in the trade about the situation, we have about come to the conclusion that the Honorable Senator just couldn't care less about the position in which his proposal would put the chemical industry. In his mind, business must be throttled and controlled so completely by government regulations that many, if not all, of its research functions will be taken over by agencies of the Federal Government. Thus he would be in a position to gloat to his constituency that he had subdued the dragon and that these octopus-like companies would no longer have the power to set prices sky-high and enjoy outrageous profits.

We have news for Ethereal Estes. While "protecting" the public from the grasp of private companies, he is likely also to "protect" his own constituents as well as people in general, from the benefits of new chemical developments brought about through private, competitive research.

The present proposals include only "drugs," but how broad is this definition? That's the point of concern to every manufacturer of pesticides and conceivably of fertilizers.

The feeling of the industry was well put in a letter to Sen. Kefauver by Lea S. Hitchner, president of the National Agricultural Chemicals Assn. Mr. Hitchner pointed out that the status of many products made by the pesticide industry is in doubt because of the wording of the proposal. Although pesticidal products apparently are not now included in the provisions of the bill, they could well be drawn in later.

As Mr. Hitchner points out in his letter, "We have observed that when a particular regulatory system is imposed on one type of product under the Federal Food, Drug and Cosmetic Act, there is a strong inclination to impose that same type of regulatory control on other products regulated under related provisions of the Federal Food, Drug and Cosmetic Act or under allied laws. For example, the so-called 'Delaney Cancer Amendment' to the Food Additives Bill relates only to food additives regulated under section 409 of the Act.

"Nevertheless, the Secretary has imposed the provisions of the Delaney Cancer Amendment in regulating pesticide residues under section 408 of the Act. Likewise, the requirements of section 409 of the Food Additives Amendment relating to analytical methods have been transplanted and superimposed in regulating pesticide residues under section 408.

"The Department of Health, Education and Welfare has recognized this tendency to superimpose the provisions of one portion of the Act in regulating products under a separate portion of the Act. A recent communication from that agency contained the following statement:

"'We believe that the Federal Food, Drug and Cosmetic Act as amended must be regarded as a single entity designed primarily for public protection. If we undertook to administer this statute, section by section, without regard for what effect an action under one section might have on meeting or failing to meet the requirements of another section, we would be working in a vacuum and would not be meeting the objectives of the statute. When we are petitioned to establish a tolerance that permits residues of a pesticide to remain in or on a raw agricultural commodity, we would be remiss if we did not take into account where that residue is going to go, how it may be concentrated or reduced, and whether the presence of the residue at the level sought will result in conflict with some other section of the statute.'"

The pesticide industry, particularly, must be apprehensive that the patent provisions of the bill would discourage both private and corporate research programs now being carried on to develop new chemicals for agriculture. Such new products must be introduced continually to meet the problems of insect resistance and to control new insects and diseases which will continue to appear.

Every company in the trade which has gone through the rigors of developing a new product is cognizant of the cost of around $1.5 million as a minimum to get it ready to put on the market. Could any responsible company justify to its stockholders an outlay of this magnitude when patent protection is practically nil? And would this same firm continue to spend millions in research programs to find new products to market, with no assurance that the product when completed, will actually remain the property of the company which developed it? With the life of a patent limited to three years, the time would be expired almost before the necessary technical data could be acquired to obtain approval for sale.

Small manufacturers who have developed many important pesticidal products, are already discouraged by legislation in existence. Under the provisions of Sen. Kefauver's proposal, incentives would be completely killed and there would be practically no time nor effort spent in the research field.

"The proposed legislation is simply another step toward socialized research," Mr. Hitchner observed in his letter. The implications of this statement may bring only a smirky smile on the Senator's face, for it has become quite apparent that socialized research is a goal he has long sought.

However, letters of protest from additional individuals in the field might have some effect on the lawmaker. We would encourage many in the trade to point out to Sen. Kefauver the ultimate effects of his type of legislation. If he really wants to protect his people's health and assure them of a plentiful supply of food, he should turn his thinking toward encouraging more, not less, private and corporate research. Such is the source of more beneficial things than he knows about, or likes to admit.

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EXECUTIVE AND EDITORIAL OFFICES — 2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

Published by

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Associated Publications—The Northwestern Miller, Farm Store Merchandising, Feedstuffs, Feedlot, Professional Nursing Home

December, 1961

Dec. 14-15—Ohio State Fertilizer and Lime Conference, Agricultural Administration Building, Ohio State University.

January, 1962

Jan. 3-5—Northeastern Weed Control Conference, 16th annual meeting, Hotel New Yorker, New York City.

Jan. 4-5—Arkansas Plant Food Conference, Marion Hotel, Little Rock, Ark.

Jan. 4-5—Eighth Annual Mississippi Insect Control Conference, Mississippi State University, State College, Miss.

Jan. 4-5—Wisconsin Pesticide Conference with Industry, 16th annual meeting. Wisconsin Memorial Union Bldg., University of Wisconsin, Madison.

Jan. 5-6—Western Colorado Horticultural Society, Civic Auditorium, Grand Junction, Colo.

Jan. 9-10 — Texas Fertilizer Conference, College Station Student Center, College Station, Texas.

Jan. 10—Fertilizer Industry Representatives Conference, Memorial Union, Iowa State University, Ames, Iowa.

Jan. 10-12 — Agricultural Ammonia Institute, eleventh annual convention, Sheraton-Jefferson Hotel, St. Louis, Mo.

Jan. 11-12—Conference on Fertilizer Manufacturing Problems, DeSoto Hotel, Savannah, Ga.

Jan. 15-16—Annual Pesticide School, North Carolina State College, Raleigh, N.C.

Jan. 15-17—Georgia Plant Food Conference, Continuing Education Center, Athens, Ga.

Jan. 16—Georgia Plant Food Educational Society, Inc., 1962 annual meeting, Georgia Center for Continuing Education, University of Georgia, Athens, Ga.

Jan. 16-17—Purdue Annual Agricultural Pesticide Conference, Memorial Center, Purdue University, Lafayette, Ind.

Jan. 16-17—Fertilizer, Machinery & Chemical Exposition, for 1962, Pershing Municipal Auditorium, Lincoln, Neb.

Jan. 16-17—Illinois Fertilizer Industry Conference, Champaign Country Club, Champaign, Ill.

Jan. 17-19—Southern Weed Conference, 15th annual meeting, Hotel Patten, Chattanooga, Tenn.

Jan. 18-19—Southern Farm Forum, 15th annual meeting, Roosevelt Hotel, New Orleans, La.

Jan. 23-25—Fourteenth Annual California Weed Conference, Hotel Sainte Clair, San Jose, Cal.

Jan. 23-25—California Weed Control Conference, St. Claire Hotel, San Jose, Cal.

Jan. 25-27 — Agricultural Aircraft Assn., 12th annual convention, Hotel El Mirador, Palm Springs, Cal.

Jan. 29-30—24th annual meeting, National Cotton Council, Roosevelt Hotel, New Orleans, La.

February, 1962

Feb. 5-7 — Southern Agricultural Workers, Jacksonville, Fla.

Feb. 12-13—Short Course on Fertilizer Technology and Use; Purdue University, Lafayette, Ind. Sponsor: Soil Science Society of America.

Feb. 13-14 — Aquatic Weed Control Society, 3rd annual meeting, La Salle Hotel, Chicago, Ill.

Feb. 15-16—Annual joint meeting, Midwestern Agronomist and Fertilizer Industry, Edgewater Beach Hotel, Chicago. Sponsor: National Plant Food Institute.

March, 1962

March 13-14—Symposium on Packaging of Chemical Products, sponsored by Manufacturing Chemists' Assn., Chase-Park Plaza Hotels, St. Louis, Mo.

March 21-22 — American Chemical Society Symposium on "Role of Chemicals in Modern Food and Fiber Development," Washington, D.C.

June, 1962

June 26-28—Pacific Branch, Entomological Society of America, Villa Hotel, San Mateo, Cal.

June 26-28 — Pacific Northwest Regional Fertilizer Conference, 13th annual meeting, sponsored by Pacific Northwest Plant Food Assn. and State Agricultural institutions, Walla Walla, Wash.

October, 1962

Oct. 24-26—1962 Fertilizer Industry Roundtable Meeting, Mayflower Hotel, Washington, D.C.

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Pacific N.W. Assn. Elects New President

Newly-elected president of the Pacific Northwest Plant Food Assn. is Dick South, Hanson and Peterson, Inc., Mt. Vernon, Wash. He was formerly vice president and was named president during the recent annual fall convention meeting of the membership at Gearhart, Ore. Mr. South succeeds Harold Rud, J. R. Simplot Co., Salem, Ore.

Named vice president is G. L. "Swede" Cummings, Huntington-Cummings Co., Walla Walla, Wash. Don Burlingham, Woodburn Feed and Supply, Woodburn, Ore., will serve as secretary.

Elected to the board of governors were: Roscoe Williams, Williams, Inc., Moscow, Idaho; Tony Romano, Quincy Farm Chemicals, Quincy, Wash.; Lyle Neff, Agriform Co. of Washington, Pasco; Bill Duncan, Northwest Nitro-Chemicals, Portland; Trevor Steele, American Potash Co., Portland, and Robert Inkpen, Cominco Products, Spokane, Wash.

DIES IN RETIREMENT

David H. Mobley, 79, who retired from the fertilizer business in Atlanta, Ga., 12 years ago, died recently in McDonough, Ga. He had been ill several months.

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Classified advertisements accepted until the fifth of each month for that month's issue.

Rates: 20c per word; minimum charge $3.00. Situations wanted, 15c a word; $2.25 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25c per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of $12 per column inch.

All Want Ads cash with order.

MACHINERY WANTED

WANTED—USED ANHYDROUS AMMONIA tanks or applicator equipment. Notify Dorchester Fertilizer Co., Cambridge, Md.

MACHINERY FOR SALE

FERTILIZER MIXERS—MUNSON NO. 200, 6 ton, 3 years old, complete with motor and drive. Munson No. 60, 2 ton, complete with motor and drive. Reply to Midland Coop., Inc., 739 Johnson St. N.E., Minneapolis 13, Minn.

MISCELLANEOUS

We will purchase for cash your **surplus agricultural herbicides** and **insecticides.** Please send list and minimum acceptable price to **Colorado International Corp.,** 5321 Dahlia St., Denver, Colo.

HELP WANTED

EXPERIENCED SALESMAN WITH TECHnical ability for the sale of phosphoric acid to fertilizer manufacturers and liquid fertilizer manufacturers in Midwest. Send confidential resumé including academic background, work experience and salary requirement to Ad No. 7421, Croplife, Minneapolis 40, Minn.

SALESMAN FOR FORMULATED FERtilizer—Experienced in sales of N.P.K. fertilizer including the selection of distributors, points of distribution, and establishment of merchandising program. Excellent opportunity for an aggressive and ambitious man with fertilizer sales background. Salary plus commission. Requires traveling. Send complete resumé including salary requirement to Ad No. 7406, Croplife, Minneapolis 40, Minn. All information submitted will be held in confidence.

HELP WANTED

REPRESENTATION WANTED IN THE states of Mississippi, Louisiana, Kentucky, Illinois, Missouri, Texas, Kansas, Oklahoma, New Mexico, Colorado, Utah, Montana, Wyoming, North Carolina, South Carolina, Georgia, Florida, Alabama and Tennessee. Men presently calling on fertilizer manufacturers, distributors and dealers preferred. Big ticket item, straight commission. Send full resumé first letter to Kenneth E. Nelson, Sales Manager, Tyler Manufacturing Co., Inc., Benson, Minn.

SALES MANAGER FOR THE FOLLOWing territories: (1) Kansas, Nebraska and Iowa; (2) Oklahoma and Missouri; (3) Utah and Idaho; (4) Texas and New Mexico. We are looking for men who have the ability to create a minimum of $200,000 per year sales within these areas. Good salaries and bonuses and an opportunity to become an executive member of our organization. Time Chemical Corp., 5321 Dahlia, Denver, Colo.

SALES REPRESENTATIVE

For nitrogen producer. Excellent opportunity. Agricultural or chemical education. Location Midwest. Three to five years' experience selling to fertilizer manufacturers and direct applicators. Salary based on experience.

Address Ad No. 7493, Croplife Minneapolis 40, Minn.

ASS'T FERTILIZER SALES MANAGER

Large Corn-Belt Fertilizer Co. needs Assistant Sales Manager. A salesman looking for advancement or assistant sales manager with no chance of advance in present job will be interested in opportunity offered. College of Agriculture degree and fertilizer sales experience required. Midwest location. Send complete education-experience resume.

Address Ad No. 7418, Croplife Minneapolis 40, Minn.

PRODUCT MANAGER

Direct Application Product Manager for National Fertilizer Company. Must have a college degree in agriculture and two to five years' selling experience, preferably with either a nitrogen company or nitrogen equipment company. Prefer a man from the Midwest. Must be free to travel.

Direct Inquiries to Box 7409, Croplife, Minneapolis 40, Minn.

a unique service to save you time, worry, and money

With complete confidence you can depend on a single source to meet virtually all of your fertilizer raw material requirements—easily, quickly, economically, and expertly.

DUVAL

- **MURIATE OF POTASH**
  Standard—Coarse—Granular
- **SULPHUR—Lump and Molten**

AA

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Exclusive Sales Agent
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